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Address

NITROUS OXID AS AN ANESTHETIC IN MAJOR SURGERY.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON SURGERY AND ANATOMY AT THE FIFTY-EIGHTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, JUNE, 1907.

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CHICAGO.

It is interesting to recall that the three anesthetics most generally employed were introduced within three years of each other. Horace Wells introduced nitrous oxid gas in 1844; Morton, ether in 1846, and Simpson, chloroform in 1847.

It is interesting to follow the histories of these three agents. Chloroform, the last discovered, the most powerful, the most dangerous of the three, soon became the favorite anesthetic and possibly remains so to-day with the majority of surgeons the world over. Ether, however, has always been the favorite of American surgeons, and with the more careful studies of anesthetic statistics showing its greater safety as compared to chloroform it is rapidly gaining a foothold in Great Britain and on the continent.

Nitrous oxid gas, the safest of the three, has until recently been left to the dentist and for minor operations, although years ago the feasibility of employing it for prolonged anesthesia was thoroughly demonstrated by Bert Andrews and others.

In the last eight or ten years nitrous oxid has been more extensively used by the general surgeon, especially, however, in the sequence of nitrous oxid and ether. In this, I believe, it has no very great value, except as it offers an agreeable anesthesia to the patient.

During the last three or four years I have been employing nitrous oxid and air as a general anesthetic in an increasing number of cases and I have been so much impressed with its value and the possibilities of its wide application that I have felt warranted in bringing this matter briefly before you for your consideration.

Roughly speaking, chloroform anesthesia has a mortality of 1 in 2,000; ether, 1 in 5,000, and nitrous oxid gas, 1 in 50,000. Gas is the most agreeable anesthetic to take. It is the most rapid anesthetic, taking usually about sixty seconds. It is seldom followed by nausea or vomiting, pneumonia or bronchitis or nephritis or secondary changes in the tissues. If properly administered with air, an anesthesia of a half-hour or an hour can be secured.

I began using it in cases where ether and chloroform were specially contraindicated, as in operations on the kidneys, in nephrotomy for anuria, abscess, etc. I then extended it to kidney-stone operations and nephrectomies. Finding how easy it is to maintain satisfactory anesthesia for long periods, I have gradually increased the range of its use until now I am employing gas in a large proportion of my general surgical cases.

It is the anesthetic of choice in reducing fractures and dislocations, in opening abscesses and felons, in breaking up adhesions in joints, in draining empyemas and lung abscess, in exploratory laparotomies, in gall-bladder work, removing stones and drainage in kidney work, nephrotomy, nephrectomy and nephrolithotomy; in bladder work, suprapubic cystotomy for stone and in suprapubic prostatectomy; in draining appendiceal abscesses, in colostomy, gastrostomy and enterostomy; in repair of typhoid perforation and of perforating gastric and duodenal ulcers; in hernia operations, especially for relief of strangulated hernia; in varicocele and in open operation for hydrocele; in castration; in amputations, except the largest joints, and in removing tumors, such as fatty tumors.

There are some operations in which it can not be very well employed, especially about the perineum, hemorrhoid operations, for instance; there being a great tendency for the patient to straighten the limbs out and interfere with the procedure. Operations where very complete relaxation of the muscles is desirable are not well suited to gas anesthesia.

Gas anesthesia has certain disadvantages. It is expensive; this, however, could be overcome in a large hospital by manufacturing the gas in an apparatus in the operating room, as is done in the offices of dentists who make a specialty of extracting teeth and employ large amounts of the agent. The apparatus is rather cumbersome to carry around in private operating and, still, this is not a matter of much moment, as two or three cylinders and a gas bag and mouthpiece can be carried easily in a small suitcase.

To one unaccustomed to the dark color of the patient's face and the dark blood in the wound, this method seems more dangerous than ether or chloroform anesthesia. The anesthesia is not as profound as that of ether or chloroform, and the occasional talking of the patient may be disconcerting to one not familiar with the method.

In spite of these disadvantages, the great safety of the anesthesia, the rapidity of its action, the comfort with which the patient can take it, the freedom from nausea, the almost immediate recovery from the anesthesia, the great freedom from lung or kidney complication and from extensive fatty degenerations of liver, kidneys and heart which may follow chloroform anesthesia and to a less degree ether anesthesia—all of these combine to make anesthesia by nitrous oxid gas and air the method of choice in a considerable proportion of our general surgical cases.

I desire to make a plea for an extensive, general trial of nitrous oxid gas by the members of this Section, and in this connection I wish to make a suggestion, that we appoint, as has been done by the British Medical Asso-

ciation and by the Germans, a committee on anesthetics, which will present to this Section a report of the studies and progress made each year in this important field of work. The chairman will entertain a motion that such a committee, say of three or five, be appointed and that Dr. Lund, the representative of this Section in the House of Delegates, ask for a sum not to exceed $500 for the coming year to forward this work.

Original Articles

LOCAL ANESTHESIA IN GENERAL SURGERY.*

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During the past few months, in a comparatively small radius, I have known of five deaths directly attributable to general anesthesia. In two instances chloroform was the anesthetizing agent, in two ether and in one somnoform. These represent a relatively small number of cases. If there were included those indirectly attributable to general anesthesia, through pneumonia, shock and renal complications, the proportion would surely be greater. It is probable that if all instances of death directly due to the anesthetic were known the rate would be much higher than that ordinarily given, that is, 1 in 1,000 for chloroform, 1 in 10,000 for ether, and 1 in 100,000 for nitrous oxid.

Were it possible to have in every hospital a skilled anesthetist whose duties consisted only in the administration of anesthetics, the question would be simpler and the danger would undoubtedly be lessened. For many reasons this is impossible in the majority of hospitals where the ever-changing resident staff necessitates the frequent training of a new anesthetist. It is under such circumstances that my own work is done, and it is under just such conditions that the great value of local anesthesia can be best appreciated.

Operations under local anesthesia naturally consume a greater amount of time, and so in busy clinics or crowded amphitheaters where rapid work is expected general narcosis is a necessity. In private practice the feeling of assurance, that at the close of the operation the danger of complications is lessened, more than repays one for the extra time consumed. While, as has been shown by Mikulicz, postoperative pneumonia may occur after local anesthesia, it must be exceedingly rare, and in my experience has not been once encountered. The danger of shock is lessened and urinary disturbances are infrequent. Haste is not essential and the lack of trained assistants not so keenly felt.

We owe to Halsted the introduction of local anesthesia in this country. After his work and that of Corning in 1884 and 1885 local methods, taken up for a time, fell into disrepute because of reported cases of poisoning due to the use of strong solutions of cocain. Reclus and Schleich did much to overcome this prejudice by the introduction of weaker solutions. In recent years, however, many improvements have been made in technic, chief of which are the injection of nerve trunks and the addition of adrenalin to solutions. Numerous substances are available, but none seems to satisfy all the conditions as well as cocain, and in an extensive experience in its use I have never seen any bad effects from it. It is a protoplasmic poison, forming with protoplasm an unstable compound which breaks down slowly, after which the tissues return to their previous condition and resume their normal function. Cocain which has exerted its anesthetic action and has entered into this combination can not be absorbed into the circulation, and, therefore, poisoning can be due only to absorption of an excess. The toxic dose of cocain varies with the concentration of the solution in which it is administered. Interruption of the blood stream is an absolute safeguard against poisoning, and the addition of adrenalin to solutions, as first recommended by Elsberg and Barker, has practically abolished all fear of cocain poisoning.

During the past year I have had tablets of cocain and adrenalin prepared according to the formula of Braun, which contain cocain hydrochlorid 0.05 gm. and adrenalin 0.00016 gm. These are sterilized by dry heat for an hour on three successive days and can then be preserved indefinitely. By dissolving a tablet in sterile physiologic salt solution a perfectly fresh and isotonic solution is obtained. Only two strengths are necessary, viz., a 1 per cent. solution for nerve blocking and a one-tenth of 1 per cent. solution for ordinary infiltration. I have found the skin anesthetic for the placing of sutures three hours after infiltration with the 1 to 1,000 solution. The two ordinary methods—infiltration and nerve blocking—are used to the greatest advantage in combination, or to both may be added a few whiffs of a general anesthetic to tide over important or painful stages of an operation. Not only is general anesthesia well borne under these conditions, but general narcosis is obtained with a very small amount of the anesthetizing agent.

That local anesthesia has never become popular in this country is probably due to the fact that it necessitates slower work and a greater expenditure of time. The surgeon is apt to look on the method as one which is mainly useful for minor surgical procedures, and does not feel inclined to waste time and trouble in carrying out extensive operations which can be accomplished with so much less effort under general anesthesia. Familiarity and experience tend to increase one's faith, a definite ease is acquired by practice and the field of application steadily broadens. Success depends on experience and special training and on an intimate knowledge of sensory nerve distribution.

The operator must have the confidence of his patient and must work with patience and care, avoiding haste and using the utmost gentleness in the handling of tissues. Especially is this important in the early stages of an operation; for pain at this point causes, on the part of the patient, a loss of confidence which can not be recovered. No definite criterion can be laid down for the application of local anesthesia. In general it is available wherever the whole field of operation can be rendered anesthetic. Sensibility to pain varies much in individuals, and in children or hysterical persons little can ordinarily be accomplished, although I have operated successfully on a girl of 9 years for typhoid perforation, and in a boy of 7 have drained the gall bladder. In extensive dissections for malignant disease local methods are to be condemned.

In looking over the statistics of the hospital service during the last three years, I find a constantly increasing proportion of operations done under local anesthesia. In the service of January, February and March, 1907, 40 per cent. of all operations have been done with cocain alone, and an additional 12 per cent. with cocain

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

assisted by a little chloroform or ether, making in all one-half performed with the aid of local anesthetics. These operations include amputation of limbs, wiring of fractures, excision of glands of neck and groin, excision of rib for empyema, trephining, osteotomy, thyroidectomy, excision of breast, excision of varicose veins of leg, perineal urethrotomy, suprapubic cystostomy, circumcision, excision of hemorrhoids and fistulæ, exploratory laparotomy, cholecystostomy, appendectomy, colostomy, suture of typhoid perforation, radical cure of hernia, varicocele and hydrocele and numerous minor procedures. Many of these have necessarily been in selected cases, but in certain operations local anesthesia has become the routine method, and repeated experiences have developed useful improvements in technic.

A very extensive dissection of the neck is possible under local anesthesia by taking advantage of Crile's method of nerve blocking. For the excision of glandular areas in malignant conditions local anesthesia is not recommended; but we have on several occasions in very old and feeble individuals excised the submental and submaxillary glands without any difficulty. One complete excision of all the glands of the neck for tuberculosis was accomplished in a young colored girl. Through a small incision the cervical plexus was blocked at the posterior border of the sternomastoid muscle, giving an extensive area of skin anesthesia. The skin incision was then completed, the sternomastoid and omohyoid muscles divided and a complete dissection made with very little discomfort to the patient, the deeper tissues being injected as they were encountered.

Although the number of thyroid cases has been small (14 cases), I have never resorted to general anesthesia. The transverse collar incision has been used in all and the tissues injected as encountered. Recently I have found that, by extending the skin incision to the posterior border of the sternomastoid muscle and early in the operation blocking the cervical nerves as they emerge, the dragging pain in the neck caused by the delivery of the thyroid gland can be practically eliminated. These patients have all stood the operation well. There have been no after-effects and no fatalities.

In the wiring of fractures our experience has been confined to the clavicle, the olecranon process, the patella and the lower jaw. We have accomplished these without any difficulty. In several cases we have chiseled off osteophytes from the long bones, and in one instance have completed an exploration of the cranium with the trephine. The removal of a section of rib for drainage of the pleural cavity we have always done with cocain, except in very young children.

For the radical cure of inguinal and femoral hernias, Cushing's method is so satisfactory that we feel that general narcosis is never necessary, and with strangulation it is contraindicated. During the last four years we have used a general anesthetic but twice for this operation in adults, in both instances because the patient positively refused to consider the local method. During this time in a large series of cases it has never been found necessary in a single one to resort to the aid of even the smallest amount of a general anesthetic. A preliminary dose of morphin is given about half an hour before the operation and Cushing's technic is followed. An early injection about the neck of the sac and the inguinal ring avoids all pain during ligation and excision of the sac and handling of the cord and testicle. The size of the hernia matters little. The operation is usually completed without the slightest complaint and in several instances the patient has fallen to sleep during the course of the operation. We had previously thought that recurrent hernias demanded general narcosis, but recent experience has shown that by extending the incision a little higher and blocking the ilioinguinal and iliohypogastric nerves above the scar the operation can be carried out with as great ease as in ordinary cases.

In femoral hernias the incision is begun over the lower part of the inguinal canal, the fibers of the external oblique muscle are separated for a short distance and the nerves blocked. We have found by this method that the operation is practically painless. The oldest patient of this group on whom we have operated well illustrates the advantage of local anesthesia. A woman of 92 was seen on the eighth day of strangulation of a moderate sized femoral hernia. Without removing her from bed an incision was made as described above and a loop of gangrenous small intestine brought out on the abdomen. After a few hours this was opened and the bowel washed out. On the following morning, the patient's condition being remarkably improved, the gangrenous portion of the bowel was cut away and an end-to-end anastomosis done by means of a Murphy button. Her bowels moved naturally forty-eight hours later.

Small umbilical hernias are always done under local anesthesia, and in very large or postoperative hernias we have used with great success the combined cocain-chloroform method. Quite recently I was able to complete the cure of an enormous postoperative midline hernia containing large and small intestine and adherent omentum. The repair was done by the overlapping method. A 1 to 2,000 cocain solution was used until the sac was opened. During the separation of the adhesions and the return of the contents of the sac to the abdominal cavity whiffs of chloroform were given. The patient was never fully unconscious and was talking rationally during the closure of the wound. The operation lasted nearly three hours, during which time there was no variation in the pulse rate.

In all scrotal operations, the radical cure of hydrocele and varicocele, the field of operation can be so well anesthetized by nerve blocking through the high hernia incision that a general anesthetic is never considered. We have completed Whitehead operations without the slightest pain, and in all the lesser operations for hemorrhoids and simple fistulæ and fissures local anesthesia is our routine method.

It is in abdominal surgery that experience is of the greatest value in familiarizing one with the painful manipulations which are to be avoided—traction on the mesentery and disturbance of the parietal peritoneum. All of the abdominal wall incisions can be accomplished with ease, separation of the rectus fibers being the simplest. A satisfactory exploration can usually be made, and naturally those viscera in apposition with the parietes are most available for operation. Colostomy and simple enterostomy are always practicable. In typhoid perforation local anesthesia has been used in every instance (9 cases), and only in the first two was it necessary to resort to general anesthesia for the completion of the operation. In typhoidal cholecystitis I have walled off and drained the gall bladder successfully. I have been able to complete an appendectomy seven times, twice in the presence of an abscess, but local anesthesia is to be recommended only in selected cases with mild symptoms or when there are strong reasons for avoiding general narcosis.

The healing of wounds has been uniformly good. I have never seen sloughing of the skin and there have been no cases of suppuration, and Bodine's statement that the gentler handling of the tissues is responsible for these results offers the probable explanation.

A most interesting experience has been in the observation of the sensibility of various tissues; for a knowledge of the variations in sensibility is the keynote to success. In general our results have served to support the findings of Lennander and Braun. The skin being thoroughly anesthetized and the incision made, there is little sensation in the subcutaneous tissue and muscles as long as blood vessels, large nerve trunks and connective tissue bundles are avoided. Periosteum is exquisitely sensitive, but when it has been cocainized the bone beneath has no sensation. This we have well demonstrated on the skull in a case of trephining. An incision was made under cocain infiltration and the scalp retracted. The periosteum was exposed and an attempt at incising it caused great pain. It was injected with 1 per cent. cocain solution and reflected from the bone. A one-inch trephine opening was then made and the button lifted out. The patient felt no pain. The dura was incised without pain. The brain cortex was touched with gauze and with instruments and there was no sensation whatever. When seen in the ward half an hour after the operation, the man was sitting up in bed reading a newspaper.

The same insensibility to pain in bone has been noted in several cases of amputation, in the removal of osteophytes and wiring of fractures. In every instance after thorough cocainization of the periosteum, the actual manipulations of the bone itself have been unaccompanied by pain. The patients have stated that they could feel and hear the sawing, but it was as if a board were being sawn while resting upon some part of the body. The synovial membranes of joints have proved exquisitely sensitive.

In the abdomen numerous observations have corroborated the statements of Lennander: that the parietal peritoneum is sensitive, while the visceral peritoneum and the viscera, even in the presence of inflammation, are not. We have found time and again while operating under local anesthesia that, as long as the parietal peritoneum is not disturbed by actual contact or by traction with instruments or through the mesentery, there is no complaint of pain. On the other hand, the slightest touch to the parietal peritoneum brings forth a complaint, and in inflammatory conditions this sensibility seems to be increased. Manipulations of the viscera, causing tension on their mesentery and thus on the posterior parietal peritoneum, cause not only pain, but a sensation of nausea, and I have seen actual vomiting occur.

The point to which the pain is referred is interesting. Whereas clamping, crushing or burning across the appendix causes no sensation whatever, the pulling on its mesentery incidental to its ligation produces a sensation of nausea and causes the patient to complain of pain, not in the region of the appendix, but in the epigastrium, suggesting an explanation for the early pain of appendicitis so often noticed in this region. In the same way I have noticed in one instance that traction on the gall bladder caused a complaint of pain in the right shoulder, and in another case distension of a gall bladder with fluid through a fistula produced the same result. I have exposed the right lobe of the liver and opened an abscess in it with the Paquelin cautery without pain. In the case of the kidney also we have shown to our own satisfaction that there is no sensation in its substance. In order to exclude the possibility of drug interference with the sensibility of the viscera and the visceral peritoneum, I have recently carried through a few explorations of the abdomen, omitting the preliminary dose of morphin and the cocain, the abdominal incision being made by means of infiltration with physiologic salt solution. Two facts were demonstrated by these operations: first, the importance of cocain in however small proportion in the anesthetizing solution, and, second, the marked contrast between the sensibility of the parietal and the visceral peritoneum. The findings in these cases were exactly the same as when cocain was used. I append abstract of two of these cases.

CASE 1.—Exploratory laparotomy for suspected carcinoma of stomach. No preliminary dose of morphin was given. The man was placed on the operating table and the field of operation prepared. With physiologic salt solution, a wheal was produced in the skin as in the ordinary procedure with cocain, except that the wheal was made much larger in order to produce greater tension. The skin was incised through this wheal. The production of the wheal caused no discomfort, but the incision elicited a complaint of pain, in striking contrast to an incision made under cocain infiltration. The anterior sheath of the right rectus muscle was opened and the muscle fibers separated. The posterior sheath and peritoneum were opened in a similar manner and a clamp placed on either edge of the parietal peritoneum. The patient complained bitterly at each step of the incision, and when the peritoneum was clamped cried out with pain. All manipulations were now discontinued for some time, allowing a rest, until the patient said he felt perfectly comfortable. The omentum was then picked up with a clamp, care being taken to avoid the parietal peritoneum. The omentum was clamped and then torn slightly till a bleeding point necessitated the placing of a ligature. In reply to questions the patient stated that there was no sensation. The transverse colon was seized with a clamp and pinched till a distinct imprint of the serrations was left on its surface. The patient said he felt nothing. A clamp was placed on the suspensory ligament of the liver; there was no sensation. The colon was held and its surface rubbed with gauze; there was no pain. Traction was made on the omentum and on the colon and the patient complained of pain. Traction on the suspensory ligament of the liver also caused pain. The parietal peritoneum was rubbed gently with gauze, the patient immediately tightening his abdominal muscles and crying out with pain.

CASE 2.—Large irreducible right inguinal hernia in colored man. No preliminary dose of morphin was given. The skin was infiltrated with salt solution and an incision made extending somewhat below the external ring. The injection was made rapidly and as thoroughly as possible, producing a wheal much larger than that customary with cocain. The anesthesia produced was slight, the patient complaining as the incision was made. The sac was opened for a distance of several centimeters, the patient complaining as the peritoneum was cut. Small intestine presented and protruded into the wound. After a few minutes' rest, when the patient expressed himself as feeling perfectly comfortable and free from pain, the intestine was seized with a clamp, rubbed with gauze and pricked with a needle. There was no pain, no sensation whatever. The intestine was gently lifted out of the sac without traction, was handled with instruments, with the fingers and with gauze without producing any sensation. When the intestine was further withdrawn so that the mesentery was stretched, the patient complained of a dragging pain and nausea. At this point the skin was injected with 1 to 1,000 cocain plus adrenalin and the incision prolonged upward. The external oblique muscle was divided and the ilioinguinal and iliohypogastric nerves injected with 1 per cent. solution of cocain. The operation was then continued. Just before closing the sac the appendix was inspected and its removal advised, to which the

patient consented. The appendix was seized with a clamp and brought through the internal ring into the wound and its base exposed without any difficulty. Traction on the appendix caused the patient to complain of a dragging and nauseating pain which he referred to the region of the umbilicus. The mesentery of the appendix was ligated with fine silk and divided. The tightening of the ligature caused the pain described above. A cuff of the outer coats of the appendix was turned back about its base, and in reply to a question the patient stated he felt nothing. Care was taken during this procedure to avoid traction, the cecum lying in place at the internal ring. The base of the appendix was clamped, crushed and burned across with a cautery; there was no sensation during the procedures. A purse-string suture was placed about the base of the appendix in the cecum, turning in the stump of the appendix. There was no pain. The small intestines were again tested with negative findings as to sensibility. The edge of the sac was now clamped and drawn on, bringing forth a complaint of the same dragging and nauseating pain. The operation lasted in all two hours, and was completed without any further complaint. The pulse at the beginning was 60 and at the close of the operation was 60. The highest pulse rate was 70. This occurred when the skin incision was made under salt solution infiltration and during the division of the neck of the sac, and again during traction on the mesentery of the appendix.

PREPARED AND PREDIGESTED FOODS.*

GRAHAM LUSK.

NEW YORK CITY.

Economists tell us that in the struggle for existence a quarter of the income of a civilized family is paid out for lodging, a quarter for clothing and a half for food. The savage, who requires neither clothes nor modern lodging, expends his economic force in the capture of game and the raising of corn. In view of the physical well-being of savage races and of ignorant peoples throughout the world, it must at once be apparent that the normal instinct of appetite is a faithful guide for the nutritive requirement of mankind.

There will be no escape from the judgment, "By the sweat of thy brow shalt thou eat bread," until some one realizing the dream of Berthelot shall perfect a cheap process for the manufacture of veritable ambrosia from sawdust. Emil Fischer has been pictured in a cartoon as the master of a food factory located at a coal mine. Fischer, however, remarks that he who would eat his synthetically prepared sugars and peptones must, indeed, be a wealthy person.

Man is a machine developing mechanical energy and producing heat at the expense of the potential energy contained in fat, starch and proteid. A widespread error is that this requirement for energy is variable and may be largely reduced by diminishing the intake of food. Such a belief on the part of a healthy man is automatically corrected by his appetite, leading him to eat more bread for example. But where the individual is under the care of a physician, taking his food by the physician's orders, the food requirement of the body should be very clearly understood.

Two points stand out boldly in this connection. In the first place there must be sufficient proteid food ingested to protect the organism from proteid loss, and secondly there must be given a sufficient heat value in fats or carbohydrates to protect the body fat of the person and prevent emaciation. As regards the proteid requirement, it has been found by many investigators that the average fasting man eliminates 10 grams of nitrogen in his urine, which corresponds to a destruction of 62.5 grams of proteid or the equivalent of about 300 grams of meat per day.

After prolonged fasting with extreme emaciation the nitrogen in the urine may sink to 5 grams or half what it was at first. In the case of starvation, proteid metabolism furnishes about 15 per cent. of the total fuel required by the organism and the remaining 85 per cent. is obtained by burning the body's fat. If carbohydrates be introduced alone into the circulation of a man who previously has been fasting the proteid metabolism is considerably reduced. It has also been found that where a mixed diet rich in carbohydrates is given containing 60, 50, or even 25 grams of proteid, a loss of body proteid may be prevented. In other words, the nitrogen contained in the proteid ingested is exactly eliminated in the excreta without any draft on the body's own proteid store. Such a condition is known as nitrogen equilibrium.

I do not wish to be misunderstood as commending these possible minima of proteid ingestion as being the most desirable, but I am citing the work of Chittenden and others only to emphasize the minimum of proteid ingestion below which waste of body proteid ensues. I agree with Meltzer in the idea that such a minimum is below the "factor of safety."

Passing now to the second consideration, the fuel requirement of the organism, it has been found repeatedly that a fasting man at light work and weighing 70 kilograms produces 2,240 calories of heat or 32 calories per kilogram in twenty-four hours. This is the fasting man's requirement of energy. It may be otherwise stated as being that quantity of heat capable of raising 22.4 liters of ice cold water to the boiling point. If this person were fed on a mixed diet his requirement of energy would be raised from 32 to 35 calories per kilogram of body weight. It is, therefore, apparent that food only slightly increases heat production. If too much food be given it is retained in the body; if too little, the body substance is attacked to make up the requirement of energy. It must, however, be remembered by the physician that in the case of persons confined to their beds this requirement falls to 1,750 calories, or 25 calories per kilogram, since equable temperature and muscular rest reduce the amount of needed fuel.

Ignorance of the unremitting demands of the organism for a definite quantity of dynamic energy leads to great error. I have in mind a diabetic woman whose physician told her to take a "proteid diet" without telling her to take 200 grams of fat as well, and who as a result lost 105 pounds in three months.

As concrete examples of a ration covering the energy requirement of the normal organism it may be said that two pound loaves of bread contain 2,390 calories and 64.4 grams of proteid substances, while four quarts of milk yield about 2,400 calories and contain 140 grams of proteid. The bread costs 10, the milk 20 cents. It is evident that this quantity of fuel for the human machine is not to be compressed into insignificant pellets. The ration of dried meat called pemmican, and of half a pound and more of fat, represents the most concentrated arrangement of fuel value and is used by travelers in polar regions.

The mention of bread, or of milk, or of bread and milk, as a constant dietary arouses at once the feeling of personal distaste. Bread and milk are easily digest-

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

ible and perfectly assimilable by any healthy person, but foods with a stronger flavor are usually sought for the maintenance of the body functions. Herein lies a harvest for the proprietors of any pleasant tasting substance which is sufficiently advertised. Among such substances are the "breakfast foods."

Take, for example, "grape-nuts"—a malted preparation of the entire wheat grain—which contains a large amount of soluble carbohydrate. A pound and a half of "grape-nuts" yields 2,580 calories, contains 81.5 grams of proteid and proteid-like substances, and costs 21 cents. Here then is a product, a pound of which has nearly one and one-half times the nutritive value of a pound of bread and which costs only twice as much as bread for use in nutrition. The extra price is a price for flavor alone. The advertised statement that the system will absorb a greater amount of nourishment from a pound of grape-nuts than from ten pounds of bread is obviously a falsehood, and for any one to believe that grape-nuts is in any way more specifically adapted as a food for brain and nerve centers than is, for example, bread and milk, is preposterously foolish. Grape-nuts has been selected because it is at present the most widely advertised of the breakfast foods, but the same analysis holds true of all. For many years the name of Voit was used as guaranteeing the purity of "Liebig's meat extract," yet all Voit's publications showed that the whole value of this material was in its flavor.

As regards the fuel value of the various malt extracts one may copy the statement of Hutchison in his "Food and Dietetics" that a dessertspoonful has a fuel value of 60 calories, or less than the same measure of honey, which contains 75 calories. The sugar of honey is invert sugar and ready for immediate assimilation.

There are numerous fabrications in the form of biscuit or crackers, and these are often fortified by the addition of casein or gluten. In so far as these are pleasing to the taste they are helpful to the digestion. The question of their food value concerns the physician only in the case of diabetic patients. Such patients covet carbohydrates, and biscuit may be prepared containing 80 per cent. of gluten and only 10 per cent. of starch which may greatly comfort the sufferer. Diabetic foods have been analyzed recently by Winton of the Connecticut Agricultural Experiment Station, who shows that some of the widely used "diabetic flours" are scarcely different from ordinary flour and constitute base and contemptible frauds.

The value of cod liver oil lies not entirely in the fat which it contains, but in the presence of a large quantity of fatty acid. When the latter reaches the intestine it forms a soap with the alkali, and this soap produces an emulsion of any fat which may be present, thereby giving an immediate opportunity for the action of the digestive ferment steapsin.

All of the peptone preparations consist chiefly of albumoses. Voit has pointed out that these substances are likely to produce diarrhea, and Cohnheim states that it is undesirable to administer more than 30 grams of somatose daily to a man. Such a quantity contains about 18 grams of proteid matter.

Finally there is a class of predigested proteids which are sold in solution and are commended to the purchaser in doses of one-half to one tablespoonful. Characteristic of this group are liquid peptonoids and panopepton, of similar composition and both containing considerable alcohol. As regards these preparations, the physician must remember that a tablespoonful contains only a gram of proteid material. Also that a whole pint bottle contains about 25 grams of proteid and as much alcohol as in a quart bottle of claret. Assuming that the proteids contained in these preparations are of a physiologically valuable type, then at least a pint a day would be absolutely essential to prevent loss of body proteid. It is said that many patients have died of proteid starvation through the ill-advised administration of these preparations. It may well be that these liquid foods are sometimes helpful as flavor and stimulant, but their limitations should be fully recognized.

It seems that the physician should be rightly informed as regards the requirements of nutrition. It would be well to remember the ready digestibility of white of egg, of beef juice, of peptonized milk. The wonderful improvement in the nourishment of hand-fed children should stimulate to further research along this line. No doubt much help will come from the dilution and subsequent enrichment of milk with cream and milk-sugar and the study of its action on the organism in disease. The basis of nutrition, whether in childhood or in the adult, in sickness or in convalescence, requires the administration of the proper quantity of proteid and of energy containing fats and carbohydrates and the preparation of this food in a palatable form.

[FOR THE DISCUSSION, SEE THE DEPARTMENT OF SECTION DISCUSSIONS IN THIS ISSUE.]

HOMOLOGOUS BACTERIA AS A VACCINE IN TUBERCULOSIS.*

PRELIMINARY REPORT.

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The object of this investigation was to obtain from sputum a standardized vaccine for tuberculosis. The product is called tubercle vaccine, since it resembles closely an emulsion of a tubercle.

PREPARATION OF SPUTUM.

1. Fresh sputum was carefully washed through six normal salt solutions.

2. The sputum was then thoroughly homogenized with an ordinary egg-beater for from ten to fifteen minutes.

3. An attempt was then made to separate the tubercle bacilli from the pus cells. Centrifugalizing, the whirling table, forced and simple filtering through many varieties of filter papers, through various cloths, sand, wool, cotton, glass wool, were tried with rather poor success. Thirteen layers of thin, closely-woven cloth with "threads drawn" and with the "drawn threads" parallel were used in the hope that the rods would pass more easily than the spherical cells through a filter with merely long narrow meshes. This made too coarse a filter. A fine sponge was allowed to take up the homogenized sputum. Specimens from the upper surface of the sponge showed no separation of the tubercle bacilli and leucocytes. With a rubber bulb on a glass tube, bubbles of sputum were blown and specimens taken of the thin delicate wall of the bubbles, but the cells and tubercle bacilli were still present in the same proportions. The least unsatisfactory method was to collect

* This work was carried out under a grant by Mr. Nathan Strauss, New York.

the foam after homogenizing. This foam seemed to be freer of cells and at the same time richer in tubercle bacilli. Foam was liquefied quickly by placing it under an exhaust pump.

4. The emulsion thus obtained was concentrated by centrifugalizing.

5. This emulsion was now standardized by a modification of A. E. Wright's method. I was unable to stain the tubercle bacilli without partially destroying the red cells. So the smears were made, and four square areas (about 0.5 cm. square) were marked off with blue pencil, and before staining the red cells in ten fields in each square were counted. Then the smears were stained for tubercle bacilli (Gabbett's method) and the tubercle bacilli in ten fields in each of the squares counted. This method would seem almost as accurate as Wright's method with other bacteria. The most concentrated vaccine we have made so far counted 175,000,000 tubercle bacilli per c.c. To standardize for secondary organisms Wright's method was used, but these bacteria were few.

There seemed to be no way of comparing the vaccine with any of the tuberculins. Several emulsions of tubercle bacilli that were being used for inoculation in experiments on animals in the Saranac Laboratory showed counts smaller than 175,000,000.

6. The emulsion was sterilized by heating on two successive days for two hours at 60° C. and an antiseptic was added for preservation.

7. In order to preserve from heat the toxins and ferments present, a portion of the emulsion before sterilization was passed through a Berkefeld filter. It seems difficult to standardize this filtrate, which may be an important adjuvant to the vaccine. The filtrate is either to be added to the vaccine or injected separately at the same time.

PRELIMINARY TESTS.

1. To test the sterilization, on March 16, one healthy guinea-pig was injected with 1 c.c. of the 175,000,000 emulsion that had been heated two hours at 60 C. one day. Another healthy guinea-pig (half grown) received 0.5 c.c. of this emulsion, heated to the same temperature, on two successive days. After six weeks the autopsies showed in the first guinea-pig tubercle lesions, in the second guinea-pig none.

2. The injection of unaltered tubercle bacilli in considerable numbers into tuberculous animals usually produces ulcers at the site of injection. To test this point with tubercle vaccine, two supposedly tuberculous guinea-pigs were inoculated. No ulcers resulted, but autopsies at the end of six weeks showed no lesions except caseous glands near the site of injection in the guinea-pig receiving the vaccine heated only once.

3. The influence of opsonification on the immunizing power of bacteria is still an unsettled question. To see if the tubercle bacilli in tubercle vaccine were opsonified, tubercle vaccines sterilized and unsterilized were added to washed leucocytes, appropriate controls being made. No phagocytosis resulted. After adding serum, phagocytosis did occur. Only two such tests have been made so far.

It was proposed to study the action of the vaccine by various experiments on animals. Dr. Trudeau has suggested that, since one of its main advantages lies in its being homologous, animal tests will not be entirely fair. He suggested further that the homologous feature could be approximated by infecting the animals to be treated with the unsterilized vaccine to be used.

HISTORICAL DATA.

In 1638, an English professor, Dr. Robert Fludd, advised sputum injections as a cure for phthisis. Ten or fifteen years ago two homeopaths, Dr. Jaeger and Dr. Burnett,[1] an Englishman, began to use sputum inoculations. Burnett called his vaccine bacillinum, and thus describes its preparation:

> Take a portion of the lung of an individual who has died of genuine bacillary tuberculosis pulmonum, choosing a good-sized portion from the parietes of a cavity and its circumjacent tissue as herein will be found everything pertaining to the tuberculous process—bacilli débris, ptomains and tubercles in all stages (such was practically the origin of the matrix of my bacillinum) and prepared by trituration in spirit. In this way nothing is lost.

Bacillinum has had some place in homeopathic treatment ever since. The homeopathic preparations, because of their probable lack of standardization and because of their infinitesimal dilutions, can be ignored. In recent years some American physician has advocated sputum inoculations.

THEORETICAL ADVANTAGES OF TUBERCLE VACCINE.

Tubercle vaccine contains the constituents of the sputum. The bacteria are homologous and non-cultivated, and include probably representatives of all the bacteria concerned in the individual's lung lesions.

As to the chemistry, we learn from Hammarsten,[2] von Jaksch[3] and others that tuberculous sputum contains mucin, saliva, albumoses, peptones, glycogen, fats, ferments, inorganic matter: a great complexity, but this may be said of B.F. (*bouillon filtre*), O.T. (original tuberculin, Koch) and other tuberculins. Escherich found ferment in all sputa from extensive destruction of lung tissue. The rôle of this ferment in producing cavities and hemoptysis may be important. Flexner and Noguchi[4] showed that cobra venom, when injected, produced a cytolytic effect on the endothelium of capillaries and thus allowed hemorrhage. An anticytolysin which prevented the destruction of the endothelium was produced by treating animals with the venom. If the ferment in sputum is important, sputum inoculations should evoke an antiferment that should aid in the body's defense. Naturally there is some toxin in the sputum due to disintegrated bacilli.

HOMOLOGOUS BACTERIA.

A. E. Wright's success with his various vaccines seems to depend largely on the bacteria being homologous.

If into a lupus patient tubercle bacilli are injected from an outside source no lesion arises. If the patient's own tubercle bacilli are injected a lesion occurs. Deutsch demonstrated that a syphilitic can not be reinfected from without, but can be reinfected from his own lesion. "The excitant of lues appears to have acquired an immunity against the defensive mechanism of the body which is difficult to overcome" (Loewenstein[5]).

This vaccine avoids the great variety of tubercle bacilli and is restricted to the particular tubercle bacilli the body is fighting. Loewenstein thought that leucocytes acted differently toward tubercle bacilli of varied sources, avian, etc. Dembinski found in pigeons that phagocytes are not so capable against avian as they are

1. The New Cure of Consumption by Its Own Virus.
2. A Text-Book of Physiologic Chemistry.
3. Clinical Diagnosis.
4. Production and Properties of Anti-Crotalus Venin, Jour. of Med. Research, xi, 2.
5. Ueber das Verhalten der Eiterzellen gegenuber den Tuberkelbazillen, Ztschr. f. Hyg. u. Inf., iv, 3.

against human tubercle bacilli. Loewenstein found that leucocytes freshly voided from a tuberculous bladder englobed strange, but not homologous tubercle bacilli. After treating this patient with Koch's new tuberculin for eight months these leucocytes did englobe the homologous tubercle bacilli *in vitro* and marked phagocytosis of tubercle bacilli was present in the urine. This occurrence was simultaneous with marked improvement clinically. This bladder case and the above facts concerning lupus and syphilis argue eloquently that bacteria growing in the body acquire a capacity to withstand the bactericidal powers of the body. That is, homologous bacteria differ in some way from "strange" bacteria. It would seem wise, therefore, to vaccinate with the exact bacterium which is causing the disease. The above mentioned bladder patient was treated with non-homologous bacteria and improved, but this does not preclude the idea that homologous bacteria would have been far more effective.

Bier's treatment, besides giving fresh blood to the old focus, causes old toxins to be flushed out into the circulation as seen in the temperature which Bier's treatment produces. Tubercle vaccine would be like this, an autovaccination.

NON-CULTIVATED BACTERIA.

Are cultivated bacteria different from those growing in the body? Welch believed that bacteria growing in the body produce their own antibodies to oppose the complements, amboceptors, etc., of the organism. Bail's agressin theory considers the defensive power of the bacteria against the bactericidal powers of the organism. Bail demonstrated that typhoid bacteria grown in the peritoneal exudate of guinea-pigs wards off agglutination even by strong sera.

Loewenstein found that the tubercle bacilli from the urine in his bladder case before tuberculin treatment resisted phagocytosis by the urine leucocytes. After cultivation for two generations these bacilli lost this resisting power and acted like non-homologous tubercle bacilli.

Theobald Smith[6] believes that "tubercle bacilli as they come directly from some discharging focus are provided with some protecting, more or less inert substance as an envelope."

The persistent efforts by many investigators to prepare a culture medium closely simulating body conditions show the wide belief that cultivated bacilli differ from non-cultivated. Liver, lung, brain, egg, media plus blood, media plus immune sera, etc., have been tried.

Denys and Leclef[7] found that streptococci are killed if planted in a serous exudate rich in leucocytes. If, however, the streptococci are injected intraperitoneally the extracellular cocci do grow in the peritoneum. Thus exudate is bactericidal *in vitro* but not *in vivo*.

The two striking examples of active immunity (smallpox and rabies) are obtained by injecting products immediately from the animal. Metchnikoff[8] says: "The vegetable micro-organisms frequently manifest most characteristic phenomena of acclimatization." He acclimated one of the lowest plants to an arsenical solution which at first was deadly. Sawtchenko found that anthrax bacilli could be accustomed to live in rat serum, although at first this serum was bactericidal. Danysz observed that the anthrax bacilli defend themselves by a thin sheath of mucus. Metchnikoff observed tubercle bacilli in giant cells with a series of sheaths which he believed the tubercle bacilli manufactured for protection. So micro-organisms acquire characteristics dependent on their media. Thus is emphasized the advantage of not using bacteria that have grown on artificial media when the patient is fighting an old enemy that has learned to meet all the body's attacks.

PUS CELLS.

The pus cells in tubercle vaccine are probably not without value. Peter Patterson[9] treated local and lung tuberculosis with the caseous matter from tuberculous abscesses. He believed the substances inimical to tubercle bacilli were in the solids. Others have done this work on animals.

The leucocytes in the tubercle vaccine disintegrate by the fourth or fifth day, even although the vaccine is kept in the ice box. If the disintegrated leucocytes are incapable of provoking the formation of a leucocytolysin, my attempts to separate the pus cells from the vaccine were probably unnecessary.

MIXED INFECTION.

Tubercle vaccine is at times a double bacterio-vaccine. The secondary organisms when present may be presumed to come from the lungs on account of the washing. Thus the patient is treated with the peculiar organisms which are causing the lesions, and these organisms are unaltered except by moderate heat.

I wish to express my sincere thanks to Mr. Nathan Straus of New York, through whose generosity this research was made possible; to Doctors Trudeau, Baldwin and Brown for their great helpfulness in this work, and to Mr. E. J. Farren, my laboratory assistant, for his intelligent and energetic aid.

6. The Parasitism of the Tubercle Bacillus and Its Bearing on Infection and Immunity, THE JOURNAL A. M. A., April 28, 1906, 1247.
7. (Cited by Bordet): Ann. de l'Inst. Pasteur, 1897, xi.
8. L'Immunite.
9. Some Observations on the Effect of Sterile Caseous Matter in the Treatment of Tuberculous Disease, Lancet, Aug. 25, 1906, clxxi, 4330.

THE CAUSE OF INFANTILE ATROPHY

DEDUCED FROM A STUDY OF SECRETIN IN NORMAL AND ATROPHIC INFANTS.*

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The etiology of infantile atrophy has long been one of the most mooted questions in pediatrics. A large number of theories have been advanced, but none of them has been widely accepted. Metabolism investigations[1] have shown the loss of nitrogen and fat; but the mere registration of these facts gives us no clue as to the causes which lie beneath these phenomena. The theory of acid intoxication advanced by Czerny and Keller[2] has not been generally accepted. Even if we grant that atrophic infants are in a state of acidosis, it remains to be proved that the acidosis is primary and not secondary

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*From the Laboratory of Biological Chemistry of the Harvard Medical School. The expenses of this research were defrayed in part by a grant from the Proctor Fund for the Study of Chronic Diseases.

1. Wentworth (A. H.): THE JOURNAL A. M. A., Aug. 26, 1905; Sept. 9, 1905.
2. Jahrb. f. kinderh., 1897, xliv, xlv; 1898, xlvi.

to the inanition, which, as is now believed, may produce metabolism conditions like those observed in acidosis. The theory that intermediary metabolism is disturbed is an assumption which does not tell us the fundamental cause, nor the location, nor the nature of the disease. Anatomic studies are interesting, but as is so often the case in purely morphologic research leave us in the lurch when we attempt to use them to explain disturbance of function.

Of the anatomic studies, Bloch's[3] are particularly interesting. In a study of serial sections of the stomach and intestines of three atrophic infants, he found no evidence of intestinal atrophy. The only abnormality to which he attached importance was the condition of Paneth's cells, cells discovered by Paneth in 1888 in Lieberkühn's ducts. Under normal conditions the presence of certain granules in the protoplasm of these cells is accepted as evidence that these cells are functioning. In these cases of atrophy examined by Bloch the granules in Paneth's cells were, for the most part, absent. There was no appearance of degeneration in the cells themselves, and Bloch concluded that these cells were not functioning. He regarded this condition of Paneth's cells as a causative factor in the production of infantile atrophy.

Without questioning these findings of Bloch, I do not believe that it is safe to draw any conclusions whatever as to disturbance of function solely from such purely histologic findings as these. Moreover, although I have no desire to discredit the work of Bloch, I can not believe that the thickness of the intestinal wall is normal in cases of atrophy. Any one who compares the thickness of the intestinal walls of well-nourished and of atrophic infants must admit that the latter are much thinner and have a smooth mucosa, while the former are much thicker and have a mucosa covered with transverse ridges, valvulæ conniventes. They are especially prominent in the upper portion.

The thin and smooth appearance of the small intestines in atrophic infants has been attributed to chronic dilatation without much evidence. A large proportion of these cases never present any sign of chronic dilatation either clinically or postmortem. The fact that Bloch found the intestinal epithelia to be intact and to take stains normally does not preclude the possibility that the various components of the intestinal wall may be reduced in bulk. It may well be that the condition of the intestines is merely a sign of the general marasmus. Certainly clinical experience has demonstrated that atrophic infants that have not gained in weight for weeks or months are able to gain very rapidly within a few days after receiving suitable food, and ultimately present all the appearances of fat and normal babies.

We have here physiologic evidence from clinical observation which is at variance with the assumption of any serious anatomic change. The fact that atrophic infants when put on a suitable diet mend at once is hard to reconcile with the presence of any severe anatomic lesion involving the greater part of the intestines. The fact that they do often mend so suddenly points either to a wide "factor of safety"[4] or to a functional rather than to an anatomic disturbance. This investigation was undertaken from this point of view, and in its course I undertook to investigate certain of the functions of the intestines in normal and atrophic infants.

3. Jahrb. f. kinder., 1904, lix.
4. Meltzer (S. J.): THE JOURNAL A. M. A., Feb. 23, 1907.

The researches of Bayliss and Starling[5] and of Pawlow and his school have in recent years materially advanced our knowledge of the physiology of the gastro-intestinal tract. They have particularly brought out the interdependence of the functions of the different parts of the tract. Thus Bayliss and Starling have shown that there exists in the superficial layer of the mucosa of the upper part of the small intestines of mammals a substance which they called prosecretin and which is converted by the action of the hydrochloric acid of the gastric juice into a substance called by them secretin. The latter is not secreted into the lumen of the intestines, but finds its way into the blood, by which it is carried to the pancreas and to some extent to the liver. It stimulates these organs to secrete. The chemical nature of secretin is not known, but inasmuch as it withstands boiling it probably is not a ferment. It seems to be common to all vertebrates and does not seem to be specific, for the secretin of one species is capable of activating the pancreas of another.

An appreciation of the above facts suggested to me a possible explanation of the cause of infantile atrophy, viz., a defective correlation of the several digestive organs, stomach, intestines, pancreas and liver. This hypothesis led me to undertake the experiments which are described in this paper.

The observations were made on cats, and ether was used as an anesthetic. A tracheal canula was rapidly introduced and etherization was continued through this canula.

The external jugular vein was dissected out, clamped above and below and a canula introduced and tied in. I made use of an obturator, one end of which was held in the mouth and the other inserted into the canula. This permitted me the use of both hands to tie the canula into the vein and enabled me to do without an assistant. The vein was usually tied off above and the clamp permitted to remain below to prevent blood from entering and clotting in the canula.

A canula was introduced into the pancreatic duct. For the first two or three observations the duct was dissected out and a canula tied into it. For the next two or three observations the intestine was opened and the canula was introduced into the opening of the common duct (Rachford's method). Both of these methods have serious objections for comparative work. The pressure under which the pancreatic juice is secreted is very low, especially when secretory activity is not good. A very slight obstruction will prevent the pancreatic juice from flowing into the canula. To avoid such a possibility it is necessary to be able to manipulate the canula freely, to withdraw clean and reinsert it and to try the effect of different positions of the canula within the duct. This can not be done when the canula is tied in. The objection to Rachford's method for my work is that the canula does not reach to the pancreatic gland and is in the common duct. There is chance for obstruction along the course of the duct from external pressure, etc.

A modification of Heidenhain's method was used after these initial experiments. The duct was cut transversely without dissecting it out. If in doubt whether the fluid is bile or pancreatic juice, bile a little; there is not much difference in color oftentimes. If the duct can not be found, open the intestine and trace duct from nipple downwards with canula. The canula was introduced down into the gland itself and was not tied in. It is advisable to use a canula with a relatively long tip so that it will reach the gland. It was possible in this way to withdraw the canula and reinsert it with the loss of only a few seconds of time. In addition the canula could be manipulated in various ways to increase the flow. It was found that in some positions of the canula the flow was better than in others. This favorable position was always sought for each time that the canula was introduced. This was the only way in which results could be obtained that were comparable. The capacity of this canula was 0.25 c.c.

In the early observations the pancreatic canula was allowed to remain until it filled with juice or until there was no further rise of fluid in the canula. In the latter case the contents were not removed at once but a period of time was permitted for the secretion to continue. It was soon discovered that if the contents were removed at once as soon as the juice ceased to rise in the canula the fluid would rise again, either to this point or lower. In this way a more accurate estimate could be formed of the degree of activation produced by a given injection. This procedure was constantly repeated until no further rise occurred. Undoubtedly a better showing could have been made in these early experiments if this fact had been appreciated.

The secretin was prepared in accordance with the directions given by Bayliss and Starling. The scrapings were made from the upper three feet of small intestines, ground with sand and a little hydrochloric acid, 0.4 per cent. strength. A measured quantity of hydrochloric acid (0.4 per cent.) was then added. This was allowed to stand for a few minutes, boiled over a free flame, neutralized while boiling to the point of alkalinity with a 10 per cent. solution of sodium hydroxid, and brought back to a distinctly acid reaction with acetic acid. The entire contents of the evaporating dish were then transferred to a clean cloth and as much of the fluid squeezed out as possible. This was then filtered and was

5. Journal of Physiology, vol. xxviii, 1902.

ready for use. In about half of the observations the scrapings from the intestines were ground up with sand, moistened with absolute alcohol, then washed thoroughly with cold absolute alcohol. This alcohol was filtered off and fresh absolute alcohol added and boiled for several minutes. This alcohol was filtered off and the residue dried. The dried residue was then treated with 0.4 per cent. hydrochloric acid as above. It is stated by Bayliss and Starling that substances are present in the mucus membrane of the intestines which cause a lowering of the blood pressure and an inhibition of the secretory functions of the pancreas. These substances are soluble in boiling alcohol. Prosecretin is not soluble in strong alcohol.

This dried preparation can be kept indefinitely if properly protected from oxidizing agents. It was found that freezing did not affect the activity of secretin preparations, and in this way I was able to preserve solutions for as long as two weeks in a few instances. As a rule, however, I did not attempt to preserve solutions for more than a week. In the first three or four observations the secretin was injected into the jugular vein from a syringe. After this it was always introduced by a burette; 10 c.c. were used as a rule. The injections of human secretin were always followed by control injections of cat secretin. This is absolutely essential in order to obtain reliable results. In this way any inhibition in the secretory function of the pancreas can be detected. In atrophic infants not more than one-half as much acid was used to prepare the secretin as compared with cat secretin, because there was so much less material scraped off. From 30 to 40 c.c. was used; in cats from 70 to 80 c.c.

A rule which I adopted toward the last was to kill the cat and try another, if the reaction to cat's secretin was not good. In this way I saved valuable time and precious material. The synopsis of my results is given in the following table:

SUMMARY OF OBSERVATIONS.

Date.	Observations.	Number of Injections.	Latent Period.	Duration of Flow.	Amount of Flow.
1906					
Dec. 21..	i. Atrophy.	1	.....	Short.....	½ canula.
		2	3 minutes.....	2 minutes..	1 canula.
		3	1 minute.....	Few seconds.	1 canula.
1907					
Jan. 3....	ii. Newborn.	1	No activation.		
		2	Very slight....	.....	Tip of canula.
		3	No activation.		
Jan. 3....	iii. 3 weeks.	1	Slight activation.	.....	1 canula.
Jan. 4....	iv. Atrophy.	1	Slight activation.	.....	½ canula.
		2	Slight activation.	.....	1 canula.
Jan. 5....	v. Same as iv.	1	Slight activation.	.....	½ canula.
		2	Very slight activation.	.....	Tip of canula.
		3	Slight activation.	.....	1 canula.
		4	No activation.		
Jan. 9....	vi. Atrophy.	1	Slight activation	.....	¼ canula.
Jan. 23...	vii. Atrophy.	1	No activation.		
		2	Slight activation.	3 minutes...	1/6 canula.
Feb. 10...	viii. Newborn.	1	No activation.		
Feb. 15...	ix. Newborn.	1	Slight activation.		
	½ mo.	2	Slight activation.		
Feb. 26...	x. 2 years..	1	1 minute.....	6 minutes...	1¾ canula.
		2	1 minute.....	7 minutes...	3+ canula.
		3	1 minute.....	4 minutes...	1¾ canula.
Mar. 6....	xi. 11 mo....	1	¾ minute.....	12 minutes..	2 canula.
Mar. 8....	xii. Control of obs. xvii.	1	¾ minute.....	12 minutes..	2 canula.
Mar. 13...	xiii. Premature, 3 weeks old.	1	4 minutes.....	2¼ minutes..	¼ canula.
Mar. 15...	xiv. 4 mo., normal.	1	¾ minute.....	13 minutes..	4 1/8 canula.
		2	½ minute.....	15 minutes..	5 2/3 canula.
		3	½ minute.....	6 minutes....	2 6/7 canula.
		4	½ minute.....	6 minutes....	1 3/7 canula.
Mar. 20...	xv. 10 mo....	1	½ minute.....	4 minutes....	½ canula.
		2	1 minute.....	9 minutes....	½ canula.
		3	2½ minutes...	10 minutes..	1½ canula.
.....	Premature, lived 4 mo.	1	1 minute.....	3½ minutes..	⅝ canula.
		2	No activation.		
May 2....	xvi. Atrophy.	1	Very slight....	4½ minutes..	¼ Tips filled 3 times.
		2	Activation.....	5 minutes....	
May 3....	xvii. Newborn.	1	No activation.		
May 9....	xviii. Control of obs. xvi.	1	Very slight activation.	.....	1/9 canula and stopped.
.....	Control of obs. xvii.	1	No activation.		
May 17...	xix. Normal infant, 4 mo.	1	¼ minute.....	9 minutes....	2 canula.
		2	½ minute.....	11 minutes..	2⅝ canula.
		3	½ minute.....	7 minutes....	1½ canula.
May 24...	xx. Atrophy.	1	¾ minute.....	2 minutes....	¾ canula.
		2	1 minute.....	4 minutes....	2.5 canula.
		3	½ minute.....	6½ minutes..	6/11 canula.

A study of the summary shows that the material obtained from the intestines of atrophic infants possessed little or no power to stimulate the flow of the cat's pancreatic juice, indicating either a marked diminution in the strength or in the quantity of secretin present, whereas the secretin from the intestines of well-nourished infants and children invariably produced activation of the cat's pancreas. Moreover, the preparations from the intestines of new-born infants also failed to activate. In analyzing these results it must be borne in mind that the total duration of activation is fully as important in estimating the degree of activation as the quantity of pancreatic juice secreted in a given interval of time. In many cases it seems to me the duration gives the more accurate estimate. It has been my experience that the duration is less likely to be affected by the experimental conditions, for a temporary retention of juice the result of a previous injection if suddenly discharged by some manipulation, would simulate a stimulation not really present.

In interpreting my results not only must we bear in mind the possible experimental sources of error, which I hope to discuss in greater detail in a longer publication, but also the fact that it is impossible to quantitate secretin. Secretin is not a ferment and, therefore, dilution weakens its effect. It is impossible to obtain the same quantity of prosecretin in each case. If one mucous membrane is very thin and another very thick the weight of a given quantity of intestinal scrapings would not be a reliable guide to the quantity of prosecretin in each, because the scrapings consist of both epithelium and underlying tissues, the epithelium or the tissue just beneath alone containing prosecretin. This introduces an error which thus far I have been unable to estimate. I have tried in some cases to compensate it by using for the scrapings from certain lengths of atrophic intestine half as much hydrochloric acid as for the same length of normal or cat intestines. I thus endeavored to obtain in these cases more concentrated solutions. I, therefore, feel warranted in saying that there is less secretin in the intestinal mucosa of an atrophic infant than in that of a normal one.

If now we regard my findings as an established fact, we have next to consider whether the diminution of secretin is primary or secondary to some other condition. It is possible that it is merely a symptom of inanition, and it is possible that it is secondary to some other disturbance of function higher up in the gastrointestinal tract, perhaps in the stomach. The possibility of the diminution of secretin being due to inanition I have not yet investigated; I am about to do so. However, it seems to me extremely unlikely, because suitable food evidently restores the functions suddenly and long before the general marasmus of the infant has been bettered. The possibility of its being secondary to disturbance of gastric function I have begun to investigate. Here I have been helped by recent work of the physiologists. Bayliss and Starling have shown that under normal conditions the activation of the pancreas is not entirely of nervous origin, as supposed by Pawlow. They have further shown that it is the hydrochloric acid of the stomach contents that causes the duodenum to produce secretin. It seemed, therefore, possible that the stomach of atrophic infants did not produce enough hydrochloric acid to stimulate the duodenum to produce an adequate quantity of secretin, and that infants that had adjusted themselves to cow's milk secreted enough hydrochloric

acid in their gastric juice to produce the quantity of secretin needed normally to activate the pancreas.

I investigated, therefore, the hydrochloric acid content of the stomach contents of atrophic infants and compared them with the analyses of the stomach contents of normal infants. Because free hydrochloric acid is absent or present only late in digestion in normal infants, it is useless to test for it. Combined hydrochloric acid was determined according to Sjöquist.[6] I am aware that this method has been questioned on the ground that it gives too high results. Whether this criticism be justifiable or not is immaterial here, where only accurate relative results are necessary and where differences so great as to lie beyond any possible error of method only are significant. The gastric content was always obtained one and one-quarter hours after feeding. Free hydrochloric acid was tested for with Gunzburg's reagent. My results are embodied in the following table:

QUANTITATIVE ESTIMATION OF COMBINED HYDROCHLORIC ACID IN THE GASTRIC CONTENTS OF INFANTS.

ATROPHIC INFANTS.

Name.	Age, in Months.	Weight.			Food. Per cent. of.			Quantity.		Free HCl‡	Gms. of Combined HCl in 100 c.c. of Gastric Contents.
		Gms.	Lbs.	Ozs.	Fat.	Sugar.	Proteid.	Ounces.	No. of Feedings.		
A..	4.5	3000	6	2	3	6	1	4	8	0	.01
B..	3.5	2800	5	0	3	6	1	2.5	10	0	.018
C..	3.5	3410	7	8	3	5	1	2.5	10	0	.013
D..	3	3600	8	12	3	4	1	4.5	8	0	.02
E..	3.5	4020	8	11	3	5	1.25	6	8	0	.041
F..	3.5	4150	9	2	3	5	1	.....	.....	0	.07
G..	15	7350	16	10	*	.....	.....	8.5	5	0	.018
H..	15	6850	15	.....	†	.....	.....	8	6	0	.01+

WELL NOURISHED INFANTS.

K..	7.75	6300	14	.....	Milk.			6	6	0	.16
L..	8	6740	14	15	4	7	1.25	8	6	‖	.145
M..	6	5800	13	.....	3.5	7	1.8	6	6	‖	.144
N..	9	7350	15	5	4	7	1.5	6	6	0	.105
O..	7	5540	11	3	4	7	1.25	5	8	0	.045
P..	5	5180	11	6.5	3.5	6	1.8	6	6	0	.015
R..	8	7350	16	3	4	7	1.26	6	7	0	.01+

E and F, although much under weight, were not typical cases of atrophy. Neither their previous history nor their appearance corresponded to atrophy.

* Milk, 7 oz.; oat jelly, 1.5 oz.

† Milk, 4 oz.; barley jelly, 4 oz.

‡ The reaction in the atrophic infants was faintly acid, in the well nourished infants acid.

‖ Faint reaction.

The table shows that in the case of the atrophic infants the results were very uniform, whereas the gastric contents from three out of seven of the well-nourished infants contained no more combined hydrochloric acid than that of the atrophic infants. All of the well-nourished infants were out-patients and were selected for their appearance without consulting their histories at the time. After the examination of the gastric contents showed these contradictory results I examined the histories and found that babies K, L, M and N, with normal amounts of hydrochloric acid in their gastric juice, gave no previous history of digestive disturbance, whereas babies O and P had both been atrophic infants up to within a few weeks of the time that their gastric contents were tested.

Baby O—When 5 weeks old weighed 4 pounds 10 ounces; when 9 weeks old weighed 4 pounds 10½ ounces; when 3 months old weighed 5 pounds; when 4 months old weighed 6 pounds 2 ounces. From this time she gained well and practically doubled her weight in three months. During the first four months there was a record of constant indigestion. The gastric contents were obtained when she was 7 months old. When she was 9 months old she only weighed 13 pounds, 7 ounces, so that at this time she was considerably under weight. Baby P also was atrophic until she was 3½ months old. At this time her weight was 8 pounds 3 ounces. She had been fed on many of the proprietary foods and on cow's milk mixtures. From 3½ months until 5 months she gained 3 pounds 3 ounces. The gastric contents were obtained when she was 5 months old. Six weeks later, when she was 6½ months old, she weighed 14 pounds, which was an additional gain of 2 pounds 10 ounces. Baby R had had scorbutus for the two weeks immediately preceding the time that the gastric contents were obtained. The symptoms were pain on handling and slightly elevated temperature. He had two lower incisor teeth and the gums were somewhat swollen and purple. The symptoms disappeared within five days from the time that he was given orange juice.

Several explanations can be advanced to explain the diminished amount of hydrochloric acid in these three cases. It is not improbable that in scorbutus the production of hydrochloric acid is diminished. In the case of the two infants that had previously been atrophic it is necessary to reconcile the evidence of impaired digestion as shown by the diminished amount of hydrochloric acid with the fact that at the time that the gastric contents were obtained they were apparently doing well and had made marked gains in weight and, therefore, presumably their digestive functions were not impaired at this time. It is possible that in their case the secretion of hydrochloric acid was delayed compared with the other infants. These explanations are unsupported by proof and are, therefore, of little value. Another criticism that can be made is that none of the well-nourished infants were under 5 months old, and perhaps normal infants for 3 months or under do not have as much hydrochloric acid in their gastric juice as these older ones had. A lack of time has prevented me thus far from controlling these observations. In order to be conclusive it will be necessary to make repeated examinations of the gastric contents from the same infant at different hours and to examine a much larger number of cases.

The secretion of hydrochloric acid is not the only function of the stomach. Pawlow has shown that the first gastric juice secreted, the "psychic" gastric juice, is poured out under the stimulus of hunger, food in the mouth, etc., but that the gastric juice secreted for two or three hours longer while digestion is going on must be explained on a different basis. After a meal the person or animal pays no further attention to food and forgets it, though the digestion continues. Edkins[7] discovered a gastric secretin produced by the pyloric end of the stomach during the remainder of digestion. The first gastric juice then is due to nervous action, the remainder to the action of a so-called hormone which is furnished by the first juice, and successive portions of the juice are secreted by the action of the products of gastric digestion, or hydrochloric acid, on the mucous membrane of the pyloric region. This secretin also finds its way into the blood and activates the stomach to continue the production of gastric juice. Whether this function also is disturbed in atrophy is a subject which I am investigating. The digestive functions as

6. Zeitschr. für klin. Med., 1897, xxii.

7. Jour. Physiol., xxiv.

physiologists are showing are intimately interdependent. It is highly probable that if one of them be impaired the whole mechanism is thrown into confusion. My observations seem to show that in atrophy the interrelation between the stomach and the duodenum is impaired.

What is the effective cause producing these conditions? Much of the work of physiologists outlined in the course of this paper shows that chemical stimuli are very important in the orderly regulation of the digestive functions.

Clinical observation teaches us that milk is a very highly specific food. Each species has its own characteristic milk and on this milk the young of the species thrive best. Cow's milk is adapted to the calf and not to the human infant. Young infants fortunately possess a certain amount of adaptability to abnormal conditions. The average infant can adjust itself to cow's milk if given a favorable chance. Experience shows that a large proportion of new-born infants that are fed shortly after birth on mixtures of cow's milk require from ten days to two or three weeks to adjust themselves before they digest well and make satisfactory gains. A certain number can not adjust themselves even when every precaution is taken, and a large number of those that might adjust themselves if handled properly in the beginning fail to do so because of mistakes in the quantity or strength of the food. These are the infants that become atrophic. The above clinical facts and the fact that such infants, in the limited number of cases thus far examined, do not possess the normal amount of hydrochloric acid, or the normal amount of secretin, lead me to believe that human milk contains something that is essential to the baby and that stimulates the functions of the digestive tract of the new-born without delay. When other kinds of nourishment are given this normal stimulation is imperfect and more or less delayed. When once established, however, the baby, as a rule, progresses satisfactorily.

The hypothesis as to the cause of infantile atrophy which, as the result of this research, I would propose may be briefly summarized as follows: The digestive functions of the very young infant are not activated because it does not receive the only food capable of adequately activating them, viz., human milk. This leads the stomach to secrete an inadequate gastric juice. The absence of an adequate gastric juice in turn does not stimulate the duodenum to form normal secretin. This defective secretin insufficiently stimulates the pancreatic secretion, and leads probably to as yet unstudied disturbances in the function of the gut lower down.

The question as to what renders the milk of each species specific in this way is a question that is now engaging my attention and which I hope to be able to answer in the near future. It is possible that it is due to hitherto overlooked specific substances or to certain hitherto disregarded factors in chemical composition.

OBSERVATION 1.*—Atrophic infant 7 months old; extreme emaciation; weight at time of death 2,870 grams (6¼ pounds). Postmortem three hours after death showed the usual appearances found in atrophic infants. Secretin prepared 3 hours after postmortem examination.

Dec. 24, 1906.—*First injection*, 6 c.c. atrophy secretin; slight activation; ½ canula. *Second injection*, 6 c.c. cat secretin; latent period 1½ min.; filled canula several times. (Cat died of other asphyxiation.)

Dec. 25, 1906.—*First injection*, 6 c.c., at 5:13 p. m., cat secretin; latent period in 1¾ min.; filled canula in 1¾ min.; flowed several min. *Second injection*, 6 c.c., at 4:32 p. m., atrophy secretin; latent period 3 min.; almost filled canula in 2 min. and stopped. *Third injection*, 6 c.c. at 4:44 p. m., cat secretin; latent period 1 min.; filled canula in ½ min.; flow ceased in 8 min. *Fourth injection*, 6 c.c. at 5:04 p. m., atrophy secretin; latent period 1 min.; sudden rise and filled canula and stopped.

OBSERVATION 2.—Newborn infant; lived 15 hours; six hours before death received 2 drams of breast milk and 1 dram of water. Autopsy eight hours after death; death from hemorrhage into suprarenal capsule; fat, normal infant; weight not obtained. Secretin prepared five hours after postmortem examination.

Jan. 3, 1907.—*First injection*, 6 c.c. infant secretin; no activation. *Second injection*, 6 c.c. 10 minutes after first injection; infant secretin; filled tip of canula. *Third injection*, 6 c.c. infant secretin; no activation.

OBSERVATION 3.—Infant three weeks old; fed on modification of cow's milk; weight 3,544 grams (8 pounds). Postmortem twelve hours after death; death from erysipelas. Secretin prepared six hours after postmortem examination.

Jan. 3, 1907.—*First injection*, 6 c.c. infant secretin. *Second injection*, 6 c.c. infant secretin. *Third injection*, 6 c.c. infant secretin. As a result of the entire quantity injected the canula filled once. The gland tissue swelled up somewhat. Same cat used in Observations 2 and 3; 18 c.c. was practically the entire quantity of secretin thus prepared from the infant's intestines.

OBSERVATION 4.—Atrophic infant six months old; weight 2,900 grams (6 pounds, 6 ounces); extreme emaciation. In hospital for three and a half months; weight at time of death same as at entrance. During its stay in hospital it was fed on breast milk and a whey and cream mixture. Took about 30 ounces (1 liter) of food daily. The first four weeks it took 12 ounces daily and the remainder cream and whey mixture. For one week, 10 ounces of breast milk and the remaining time 5 or 6 ounces of breast milk daily. The first five weeks it lost 500 gm. The following five weeks it gained 500 grams. The next week it gained 190 grams, and in the last two weeks it lost 240 grams. Died suddenly without apparent cause. Temperature never above 99 F. Postmortem ten hours after death showed the usual appearances found in atrophic infants. Secretin prepared five hours after the postmortem examination.

Jan. 4, 1907.—*First injection*, 10 c.c. infant secretin; very slight activation; ¼ canula. *Second injection*, 10 c.c. infant secretin; slight activation; 1 canula; the gland tissue swelled up somewhat. This cat had been used for another experiment and had been under ether for several hours, but appeared to be in good condition.

OBSERVATION 5.—This was a repetition of Observation 4, made on the following day. The same solution of secretin was used and the results were controlled with cat secretin.

Jan. 5, 1907.—*First injection*, 6 c.c. infant secretin; slight activation; 1/3 canula. *Second Injection*, 6 c.c. cat secretin; latent period 1½ minutes; canula overflowed three times. *Third injection*, 6 c.c. infant secretin; filled tip of canula. *Fourth injection*, 6 c.c. infant secretin; gradually almost filled the canula. *Fifth injection*, 6 c.c. cat secretin; slight activation. *Sixth injection*, 4 c.c. cat secretin; activation prompt and filled canula four times. *Seventh injection*, 6 c.c. infant secretin; no activation. *Eighth injection*, 6 c.c. cat secretin; activation prompt; filled canula three times.

OBSERVATION 6.—Atrophic infant 10½ months old; extreme degree of emaciation; weight at time of death 3,295 grams (7 pounds 4 ounces); said to have been breast fed for first five months, but no record obtained of his physical condition at the time. After this child was fed on modification of cow's milk for one month and then cow's milk and barley jelly for one month. Said to have had diarrhea for one month at the age of 6 months. Entered infants' hospital Oct. 1, 1906, 7 months old, weight 4,080 grams (9 pounds). Remained in hospital four weeks. Temperature normal all of the time. Re-admitted to hospital Dec. 20, 1906, and died 19 days later. All that we know of the duration of the atrophic condition is that at seven months he weighed 9 pounds. While in the hospital he suddenly developed gangrene of one foot, which was amputated. A week later there was vomiting and diarrhea, with some fever, which resulted in his death. His weight at entrance was 3,690 grams (8 pounds, 2 ounces), and at death was 3,295 grams (7 pounds, 4 ounces). Postmortem examination two hours after death showed the lesions of an old ileocolitis, presumably in September; old infarcts in kidney caused by hyalin thrombosis; partial intestinal obstruction at about the junction of the jejunum and ileum apparently fibrous tissue in the wall (congenital?). Moderate dilatation for about one foot above the partial obstruction; slight fibrinous exudation over dilated portion caused a partial volvulus. The partial acute obstruction probably accounted for the terminal symptoms of vomiting and fever. Nothing was found in the heart or larger vessels to account for the gangrene of the foot. Nothing else abnormal found.

Jan. 9, 1907.—Notes on this observation state that the results were unsatisfactory. The infant's secretin was controlled with cat secretin prepared in three strengths, viz., 1 to 9, 1 to 4, and full strength. The cat secretin did not activate as well as expected, and the notes state that the infant's secretin activated about as much as the cat secretin diluted 1 to 9, viz., about ½ canula of pancreatic juice. Ordinarily a 1 to 9 dilution of cat secretin would activate better than ½. The reason for the diminished activation was not determined. Later observations lead me to believe that the infant secretin would not have activated any better even if the conditions had been favorable, but of course I can not prove this.

OBSERVATION 7.—Atrophic infant 7 weeks old; extreme emaciation. The infant was boarded out and the weight could not be obtained. Postmortem examination thirty-six hours after death showed nothing but the appearances usually found in atrophic infants. Secretin prepared three hours after postmortem examination.

Jan. 23, 1907.—*First injection*, 1:37 p. m., 10 c.c. infant secretin; no activation. *Second injection*, 1:52 p. m., 10 c.c. cat secretin; had been kept at room temperature for a week and had lost its power; no activation. *Third injection*, 2:20 p. m., 10 c.c. cat secretin (prepared from duodenum of cat that was undergoing experiment; latent period one-half min; 1 canula in 1¼ min.; 1 canula in 1¾ min.; 1 canula in 1¼ min.; 1 canula in 2 min.; 1 canula in 4 min.; 1 canula in 3 min.; ⅛ canula in 3 min.; total of 6¼ canulas in 16 min. *Fourth injection*, 2:42 p. m., 10 c.c. infant secretin; slight activation; 1/6 canula in 3 min. *Fifth injection*, 3:50 p. m., 5 c.c. cat secretin; latent period ¼ min.; 1 canula in 1½ min.; 1 canula in 1½ min.; 1 canula in 2 min.; ⅛ canula

* There was a loss of a few seconds time and a small quantity of pancreatic juice each time that the canula was withdrawn and reinserted. The sum of the time on each chart, therefore, is not an accurate measure of the entire activation. It merely shows the rate of flow for a given interval of time. In most cases, however, it corresponds very nearly to the total activation.

1½ min.; ½ canula in 1¼ min.; ½ canula in 1½ min.; ½ canula in 2½ min.; 1/3 canula in 3 min.; total of 5 1/3 canulas in 17 min.

OBSERVATION 8.—Feb. 10, 1907, new-born infant; only about one foot of the intestines was obtained. This was almost as thin as paper, so that very little material was obtained. *First injection*, 10 c.c. infant secretin; no activation. *Second injection*, 10 c.c. cat secretin; activation prompt. Degree not determined because so little infant secretin to compare it with.

OBSERVATION 9.—Infant 2½ months old; weight 4,010 grams (8¾ pounds); somewhat under weight, but not emaciated. Breast fed for first three weeks; weaned because he vomited. Put on various foods, but continued to vomit. Entered hospital with acute infection that proved fatal in four days. Postmortem one and a half hours after death showed broncho-pneumonia and septicemia and pyloric thickening. The small intestines of this infant were thicker than those of atrophic infants and the valvulæ conniventes showed as distinct transverse ridges instead of presenting the smooth appearance seen in atrophy.

First injection, 4:07 p. m., 10 c.c. cat secretin; latent period 1½ min.; ½ canula in ½ min.; ½ canula in ½ min.; ½ canula in ½ min.; ½ canula in ½ min.; ½ canula in 1 min.; ½ canula in 1 min.; flow from this dog diminished to 1/5 canula and stopped. This occurred several times. Duration of flow ten minutes). *Second injection*, 4:20 p. m., 10 c.c. infant secretin; slight activation; 1/3 canula in few seconds; 1/7 canula time not recorded; 1/6 canula, notes say this occurred several times. *Third injection*, 4:35 p. m., 2 or 3 c.c. remainder of infant secretin; slight activation; 1/7 or 1/8 canula four or five times. *Fourth injection*, 4:48 p. m., 10 c.c. cat secretin (same preparation); latent period 1 min.; ½ canula in ½ min.; ½ canula in ½ min.; ½ canula in ½ min. 1/5 canula in 1 min.; 1/5 canula in 1½ min.; tips filled, flow lasted 8 min. This observation was not satisfactory. Neither one of two cats activated normally. In comparison with the reaction to cat secretin the reaction to infant secretin shows distinct activating power and without much doubt if the cats had responded well the infant's secretin would have done better.

OBSERVATION 10.—Child 2 years old; died in 36 hours of cerebro-spinal meningitis. A well-nourished and otherwise healthy child. The intestines were quite different in appearance from those of an infant. The valvulæ conniventes were large and the mucous membrane was thick and velvety.

Feb. 26, 1907.—*First injection*, 3:27 p. m., 10 c.c. child secretin; latent period 1 min.; ½ canula in 1 min.; ½ canula in 1½ min.; ½ canula in 2 min.; ½ canula in 2 1/5 min.; not much pressure, flow not rapid. *Second injection*, 3:40 p. m., 10 c.c. child secretin (repeated above); latent period 1 min.; 1 canula in 1½ min.; 1 canula in 1¾ min.; 1/3 canula in ¾ min.; ½ canula in 1 min.; ¼ canula in 2 min. Activation would have been better if had run half canula instead of full ones at first. *Third injection*, 3:55 p. m., 10 c.c. cat secretin; latent period 1 min.; 1 canula in ½ min., then 1 canula in 1 min.; for seven successive times; then 1 canula in 1½ min.; 1 canula in 1½ min.; 1 canula in 1 min.; 1 canula in 1½ min.; 1/3 canula in 1 min.; giving a total of 12 2/3 canulas in 16 min. *Fourth injection*, 4:24 p.m., 10 c.c. child secretin; latent period 1 min.; ½ canula in 1½ min.; ¼ canula in 2½ min. *Fifth injection*, 4:35 p. m., 10 c.c. cat secretin (frozen preparation); latent period ½ min.; 1 canula in 1½ min.; 1 canula in 1 min.; 1 canula in 1 min.; then 1 canula in 1½ min. for four successive times; then 1 canula in 2 min.; ½ canula in 1 min.; ½ canula in 1 min.; 1/3 canula in 1 min, making a total of 9 1/3 canulas in 13¼ min.

OBSERVATION 11.—Infant 11 months old; died of general tuberculosis. Its nutrition was good. Postmortem examination four hours after death. Secretin was prepared from a goat and tested on the same cat.

March 6, 1907.—*First injection*, 12:37 p. m., 10 c.c. infant secretin (absolute alcohol preparation); latent period 1½ min.; could not introduce canula into duct on account of troublesome bleeding; 8 min. after latent period 1/3 canula in ½ min. *Second injection* 1:02 p. m., 10 c.c. goat secretin; activation prompt; 1 canula in ¾ minute. (Could not collect pancreatic juice in canula, although latter was in duct. The juice escaped around the canula in the usual way. This is the only experience of this kind in the whole series of observations.)

OBSERVATION 12.—Repeated observations of 11 to control it. In addition I tested the secretin from a child 10 years of age, who died of cerebrospinal meningitis.

March 8, 1907.—*First injection*, 1:04 p. m., 10 c.c. 10-year-old child secretin; latent period 1 min. (Cat asphyxiated early in operation and had to be resuscitated. This inhibited flow of pancreatic juice. It would fill ½ or 1/5 of canula and then stop rising. Flow stopped in 10 min. Cat had to be resuscitated again just before second injection). *Second injection*, 1:29 p. m., 10 c.c. 11-months-old infant secretin (same preparation as on March 6, frozen); latent period ¾ min.; ½ canula in ½ min.; ½ canula in ¾ min. for three successive times; 1/5 canula in ½ min.; 1/7 canula in 1½ min.; 1/7 canula in 1½ min.; 1/7 canula in 1 min. (after 8 min.); 1/7 canula (at end of 12 min.; activation); This gave a total of 2 canulas in 11 minutes. Total duration of flow 12 min. *Third injection*, 1:46 p. m., 10 c.c. goat secretin (same preparation as on March 6); latent period ¼ min.; 1/3 canula in 1 min.; ½ canula in ¾ min.; 1/5 canula in 1 min.; 1/7 canula in 1 min.; 1/7 canula in 1 min.; 1/5 canula at end of 10 min. (This cat did not respond well. Took ether badly, although the smallest quantity possible to keep it anesthetized was used. It was given plenty of air.)

OBSERVATION 13.—Premature infant; 3 weeks old; weight 1,300 gram. (2 pounds, 14 ounces); died of sepsis. Fed on breast milk last nine days. Postmortem made four hours after death.

March 13, 1907: *First injection*, 2:46 p. m., 5 c.c. cat secretin (absolute alcohol preparation); latent period ½ min.; 1 canula in ¾ min.; 1 canula in 1 min.; 1 canula in 1¼ min.; (canula not in duct); after 10 minutes' activation the rate of flow was: ½ canula in 1½ min.; ½ canula in 1 min. (after 12 min.); duration of flow 18 min. *Second injection*, 3:00 p. m., 10 c.c. premature infant secretin; very slight activation. (At 3:12 the cat attempted to vomit; this has been found to inhibit secretory functions of pancreas.) At 3:15 p. m. 1/7 canula in 1 min. ½ canula in 1½ min. *Third injection*, 3:32 p. m., 5 c.c. cat secretin (same preparation as given at 2:46 p. m.; very slight activation after 3½ min., few drops. (No injections were given for half an hour in order to allow the pancreatic functions to become re-established. The cat was kept under ether during that time. I was unable to assign a reason for the attempt to vomit.) *Fourth injection*, 4:01 p. m., 5 c.c. cat secretin (same preparation as at 3:32); latent period in ½ min.; ½ canula in 1 minute; 1/3 canula in 1 min.; 1/7 canula in 1 min.; 1/6 canula in 1 min.; 1/6 canula in 1 min.; 1 canula in 1½ min. (at 4:08½); 1 canula in 1½ min (at 4:10); 1 canula in 1 min.; 1/3 canula in 1 min (at 4:15); 1 canula in 1 min. (at 4:16½); ½ canula in 1 min (at 4:19); ½ canula in 1 min (at 4:22). (Recovery of function is shown by the increased rate of flow after activation had become well established.)

OBSERVATION 14.—Infant 4 months old; well-nourished and normal looking infant; died from cerebral hemorrhage, probably traumatic. The infant was boarded out and the weight was not taken. Postmortem made fourteen hours after death. The intestines were much thicker than the intestines of atrophic infants. The valvulæ conniventes showed as prominent ridges in the upper portion of the intestine.

March 15, 1907.—*First injection*, 3:10 p. m., 10 c.c. infant secretin; latent period ¾ min.; (asphyxiation immediately after activation began, but was relieved in a few seconds). ½ canula at 3:14; 1/3 canula in 1 minute; ½ canula in 1 minute; 1/3 canula in 1½ min.; ½ canula in 1 min.; 1 canula in 1½ min.; 1/3 canula in 1 min.; making a total of 4 1/6 canulas in 10 min. (duration of flow 13 min.). *Second injection*, 3:26½ p. m., 10 c.c., infant secretin (repeated same preparation); latent period ½ min.; 1 canula in 1½ min.; ½ canula in ½ min. ½ canula in 1 min.; ½ canula in 1 min.; 1 canula in 2 min. ¾ canula in 1½ min.; ½ canula in ½ min.; ¼ canula in ½ min. 1/5 canula in 2 min. (practically stopped); 1/5 canula in 2 min.; making a total of 5 2/5 canula in 12½ min. otal duration of flow 15 min.; *Third injection*, 3:56 p. m., 10 c.c. infant secretin (diluted 1 part secretin to 4 parts water); latent period ¾ min.; 1 canula in 1 min.; 1 canula in 1½ min.; ½ canula in ¾ min.; ½ canula in 1 min.; 1/7 canula in 1 min.; making a total of 2 6/7 canula in 5¼ min. Total duration of flow 6 min. *Fourth injection*, 4:05 p. m., 10 c.c. cat secretin (diluted with 4 parts water); latent period 1 min.; ¼ min.; 1 canula in 1 min.; 1 canula in 1 min.; 1 canula in 1¼ min.; ½ canula in ½ min.; 1/3 canula in ¾ min.; 1/3 canula in 1½ min.; 1/7 canula in 1, (practically stopped); 1/7 canula in 1; 1/3 canula in ½ min. (some juice had collected in gland); making a total of 4 5/6 canulas in 9 minutes. Total duration of flow 9 minutes. *Fifth injection*, 4:22 p. m., 10 c.c. infant secretin (diluted with 4 parts water); latent period, 1½ min.; ½ canula in 1¾ min.; 1/7 canula in ¾ min.; ¼ canulas in 1 min.; ½ canula in 1 min.; making a total of 1 4/7 canulas in 4½ min. Total duration of flow, 6 minutes. *Sixth injection*, 4:32½ p. m., 10 c.c. cat secretin (diluted with 4 parts water); latent period ¾ min.; 1 canula in 1½ min.; 1 canula in 1½ min.; ¾ canula in 1½ min.; ½ canula in ½ min.; 1/6 canula in 1 min. making a total of 3 2/6 canulas in 7½ min. Total duration of flow 8 min.

OBSERVATION 15.—(a) Infant 10 months old; fat and large for her age; weighed over 20 pounds. Postmortem examination five hours after death showed hydrocephalus, spina bifida pyelonephritis, and accelerator. (b) Infant, premature at 8 months, died to be 4 months old. Said to have weighed 1,818 grams (4 pounds) at birth and gained 1,136 grams (2½ pounds) in three months on breast milk and whey mixture. In the last month put out to board and did badly and died of a pneumococcus infection. Postmortem examination 24 hours after death showed meningitis and pleurisy. The body was not markedly emaciated, but was of small size. The small intestines presented the thin and transparent appearance that is characteristic of atrophy. The weight was not obtained at time of death. (One month before death the infant weighed 2664 grams (6½ pounds).

March 20, 1907.—*First injection*, 2:37 p. m., 4 c.c. cat secretin; no activation. *Second injection*, 2:41 p. m., 9 c.c. cat secretin; latent period, ¼ min.; 1/7 canula in ¾ min.; 1/5 canula in 1¼ min.; 1/7 canula in 1 min.; 1/7 canula in 1 min. (tip of canula repeatedly until 2:55 p. m. (Activation was inhibited by fright. The cat escaped from its basket and had to be caught. The effect of the fright and the gradual-reinstatement of the pancreatic functions has been traced in the subsequent injections.) *Third injection*, 3 p. m., 10 c.c. infant secretin (used in Observation 14 and was a good activator.) This preparation had been kept frozen; latent period ½ min.; 1/5 canula in 1 min.; 1/5 canula in 1 min.; ¼ canula in 1 min.; 1/7 canula in 1 min.; 1/7 canula in 1 min.; filled tip of canula several times. *Fourth injection*, 3:13 p. m., 10 c.c. infant (a) 10 months old; latent period ½ min.; 1/5 canula in 1 min.; 1/5 canula in 1 min.; 1/7 canula in 1 min.; 1/7 canula in 1 min.; making a total of 2/3 canula in 4 min. Activation lasted 4 min. and then filled tip of canula 4 times (equal to 2 drops). *Fifth injection*, 3:28 p. m., 10 c.c., in fant (a) repeated; latent period 1 min.; 1/5 canula in ½ min.; 1/7 canula in ¾ min.; 1/7 canula in ¾ min., making a total of ½ canula in 2 min. Total duration of flow 9 min. Cat stopped breathing at 3:30 p. m., and was resuscitated. Tip of canula filled three times up to 3:36 p. m. *Sixth injection*, 3:42 p. m., 10 c.c. cat secretin (same preparation as first and second injections); latent period ½ min.; 1 canula in 2½ min.; ¼ canula in ½ min.; ¼ canula in ½ min.; ¼ canula in ½ min.; ¼ canula in ½ min.; ¼ canula in ½ min.; 1/5 canula in 1 min.; 1/5 canula in 1 min.; 1/5 canula in ¾ min.; 1/5 canula in 1 min.; 1/7 canula in 1 min.; 1/7 canula in 1 min.; making a total of almost 4 canulas in 11¼ min.; total duration of flow 15 min. This was one hour after first injection, which did not activate. This would have been a poor activation for cat secretin had the cat been normal. *Seventh injection*, 4:07½ p. m., 10 c.c. (b) premature infant, 4 months old; latent period ¾ min.; ¼ canula in ½ min.; ½ canula in ¾ min.; 1/7 canula in 1 min., making about ⅝ canula in 2 min. Total duration of flow, 3¼ min.; filled canula tip at 4:12 p. m. *Eighth injection*, 4:18 p. m., 10 c.c., infant (b) (repeated); no activation. *Ninth injection*, 4:23½ p. m., 8 c.c., infant (a) (repeated); latent period, 2½ min.; ¼ canula in 1 min.; ¼ canula in ½ min.; 1/7 canula in ¾ min.; then 1/7 canula in 1 min. for four successive times; 1/7 canula in 1¼ min. (4:36); filled canula tip three times. This made a total of 1 1/5 canulas in 8¾ min. This must be considered to be good activation because the cat was not activating well and it was the ninth injection.

Observation 16.—Extremely emaciated infant, 1 month old; fed on a modification of milk and never did well. Weight at birth, 2500 grams (5½ pounds); weight at autopsy, 1870 grams (4⅛ pounds). This infant was one of twins; the other infant was fed on the same mixture and treated in same way and was said to be doing well. Postmortem examination showed a terminal infection with streptococcus.

May 2, 1907.—*First injection*, 2:26½ p. m., 10 c.c. cat secretin (prepared at same time as the infant secretin); latent period, ½ min.; 1 canula in 1 min.; ⅝ canula in 1 min.; ½ canula in ½ min.; ½ canula in ½ min.; ½ canula in ⅝ min. twice successively, then ½ canula in 1 minute twice successively (2:36½); 1/3 canula in 1 min. twice successively; 1/5 canula in 1 min.; ¼ canula in 1 min. (2:41½); 1/5 canula in 1 min.; 1/6 canula in 1½ min.; 1/7 canula in 1 min.; 1/7 canula in 1½ min., making a total of 6+ canulas in 15½ minutes; total duration of flow, 19 minutes. *Second injection*, 2:54 p. m., 10 c.c. infant secretin; very slight activation (?); tip filled in 2 min.; tip filled in 1 min.; tip filled in 1½ min.; the tip contained 3 drops. *Third injection*, 3:03 p. m., 10 c.c. infant secretin (repeated); very slight activation; tip filled three times in five minutes. *Fourth injection*, 3:14 p. m., 10 c.c. cat secretin (repeated); activation in ½ min.; ⅝ canula in 1 min.; ½ canula in ½ min.; ¼ canula in ⅝ min.; ½ canula in 1 min.; 1/3 canula in 1 min.; 1/3 canula in 1 min.; ¼ canula in 1 min.; ⅓ canula in 1¼ min.; 1/5 canula in 1 min.; 1/6 canula in 1 min. (3:27); ¾ canula in 1 min.; 1/6 canula in 1 min.; 1/9 canula in 1 min.; 1/9 canula in 1 min., making a total of about 4⅝ canulas in 13½ min. Total duration of flow, 17½ min.

Observation 17.—Newborn infant, lived 24 hours, healthy, fat baby; weight not ascertained (estimated at about 8 pounds); never fed; postmortem examination 12 hours after death; nothing detected except pulmonary atelectasis and edema. The small intestines were considerably thicker than those of an atrophic infant and more material could be scraped off. The valvulæ conniventes could be made out.

May 3, 1907.—*First injection*, 3 p. m., 5 c.c. cat secretin (same preparation that was used May 2); latent period 1 min.; ½ canula in ½ min.; ½ canula in ¼ min.; ½ canula in ½ min.; ⅝ canula in ½ min.; ½ canula in ½ min.; ¼ canula in ½ min.; ⅓ canula in ½ min. (3:06½); 1/9 canula in ½ min. (3:09); 1/9 canula in ½ min. (3:10); tips filled at 3:15, making a total of 2⅞ canulas in 10 min. (This was one-half the usual quantity injected.) *Second injection*, 3:17 p. m., 10 c.c. infant secretin; activation. *Third injection*, 3:25 p. m., 5 c.c. cat secretin; latent period ¼ min.; ¼ canula in ⅓ min.; ¼ canula in ½ min.; 1/6 canula in 1 min. *Fourth injection*, 3:29½ p. m., 5 c.c. cat secretin; ¼ canula in ⅓ min.; 1/9 canula in 1 min.; tips filling at 3:40; (no apparent reason why cat stopped activating).

Observation 18.—This was a control of Observation 16, made on an infant 1 month old, and of Observation 17, made on a newborn infant 1 day old.

May 9, 1907.—*First injection*, 11:31½ a. m., 5 c.c. cat secretin (same preparation that was used to test the two infants on May 2 and May 3; frozen during this time); latent period ⅝ min.; pancreatic juice flowed for 6 min. before I could collect the fluid; ¼ canula in 1 min. (at 11:38); ¼ canula in 1 min.; ¼ canula in 1 min.; 1/3 canula in 1½ min. (at 11:42); 1/7 canula in 1 min.; 1/7 canula in 1 min. tips filled. Total duration of flow 13 min. on injection of 5 c.c. *Second injection*, 11:51 a. m., 10 c.c. infant 1 month old; Observation 16; preparation frozen during the 6 days; very slight activation; 1/9 canula and stopped. *Third injection*, 12 Observation 17; newborn; Observation 17; preparation frozen during the 6 days; no activation; tip of canula filled once. *Fourth injection*, 12:08½ p. m., 10 c.c. cat secretin (made at the same time as the newborn preparation May 3 and frozen); latent period 1 min.; ½ canula in ⅝ min.; 1/3 canula in ⅝ min.; ½ canula in ⅝ min.; ½ canula in ⅝ min.; ½ canula in 1 min.; ½ canula in 1¼ min. (at 12:15); ½ canula in ⅛ min.; ¼ canula in ⅝ min.; ¼ canula in ⅜ min.; ¼ canula in 1 min.; 1/3 canula in 1 min.; 1/3 canula in 1 min.; 1/7 canula in 1 min.; 1/7 canula in 1 min.; 1/7 canula in 1 min.; 1/7 canula in 1 min.; 1/10 canula in 1 min. (12:27½); 1/10 canula in 1 min. (12:29½); 1/5 canula in 2 min. (12:32½); making in all a total of 5 canulas in 18 min. Total duration of flow 24 min.

Observation 19.—Infant 4 months old; a normal appearing, fat baby, gained 1½ pounds in the last two weeks that it lived. Was fed on cow's milk 2/3 and water 1/3. Weight at time of death was 5,900 grams (13 pounds). It ate its last feeding as usual and appeared to be perfectly well. Some little time after eating it became cyanotic and died shortly afterward. Postmortem examination 24 hours after death showed "status lymphaticus." The thymus weighed 25 grams. The wall of the small intestine was quite thick and valvulæ conniventes showed as prominent ridges in the upper portion.

May 14, 1907.—*First injection*, 2:33½ p. m., 5 c.c. cat secretin (freshly prepared from dried alcoholic preparation); latent period ⅛ min.; ½ canula in ½ min. for 4 successive times; ½ canula in 1 min.; ¾ canula in 1 min.; ¼ canula in 1 min.; 1/3 canula in 1 min.; 1/6 canula in 1 min.; ⅛ canula in 1 min.; 1/10 canula in 1 min. making in all 3½ canulas in 9 min. Total duration of flow 10 min. on 5 c. *Second injection*, 2:38 p. m., 10 c.c. infant secretin (freshly prepared); latent period ⅛ min.; ½ canula in ½ min.; 1/3 canula in ⅝ min.; ½ canula in ⅝ min.; 1/5 canula in 1 min.; ¼ canula in 1 min.; 1/5 canula in 1 min.; 1/7 canula in 1 min.; 1/10 canula in 1 min.; making in all almost 2 canulas in 7 min. Total duration of flow 9 min. *Third injection*, 2:49½ p. m., 10 c.c., infant secretin (repeated same preparation); latent period ½ min.; ¼ canula in ⅝ min.; ½ canula in ½ min.; 1/3 canula in 1 min.; ¼ canula in 1 min.; ⅓ canula in 1 min.; 1/5 canula in 1 min.; 1/6 canula in 1 min.; 1/6 canula in 1 min.; ¾ canula in 1 min.; 1/9 canula in 1 min.; making in all about 2 2/3 canulas in 9½ min. Total duration of flow 11 min. *Fourth injection*, 3:04½ p. m., 10 c.c. cat secretin (repeated same preparation); latent period ⅛ min.; ⅝ canula in 1 min.; ½ canula in ½ min.; ½ canula in ½ min.; 1/3 canula in ½ min.; ½ canula in ⅝ min.; ½ canula in ⅝ min.; 1/3 canula in ⅝ min.; 1/3 canula in ⅝ m.n.; 1/3 canula in ⅝ min.; ¼ canula in ⅝ min.; ¼ canula in ⅝ min.; 1/5 canula in 1 min.; 1/5 canula in 1 min.; 1/7 canula in 1 min. (at 3:19½ p. m.); ⅛ canula in 1 min.; making in all 5⅝ canulas in 12½ min. Total duration of flow 15 min. *Fifth injection*, 3:36 p. m., 10 c.c. cat secretin (repeated same preparation); latent period ⅝ min.; ⅝ canula in 1 min.; 1.3 canula in ½ min.; ⅓ canula in ½ min.; ½ canula in ½ min.; ½ canula in ⅝ min.; ½ canula in ⅝ min.; ½ canula in ⅝ min.; ½ canula in 1 min.; 1/3 canula in 1 min.; ¼ canula in 1 min.; 1/6 canula in 1 min. (at 3:48); 1/9 canula in 1 min.; 1/9 canula in 1 min.; making in all about 4 5/7 canulas in 11 min. Total duration of flow 13 min. The canula used in this observation held 1/5 c.c. The larger canula was used, but did not collect as well.

Observation 20.—Emaciated infant, 6⅝ months old; weight, 4,450 grams (9⅝ lbs.); said never to have gained satisfactorily. Had been fed on various proprietary foods. Later had cow's milk and water. During the last four or five weeks of its life it lost ground more rapidly. A postmortem examination was made 6 hours after death, and with the exception of the small intestines and a small calcified mass in one suprarenal, nothing was detected other than the usual appearances found in cases of infantile atrophy. The small intestines, however, were different from most cases of atrophy. Instead of the usual thin and smooth intestine, the small intestines of this infant were similar in appearance to those of a normal infant 4 or 5 months old. The valvulæ conniventes were prominent, the surface was velvety and the entire wall was considerably thicker than an atrophic infant's usually is. I have never before seen the small intestines from a case of infantile atrophy that presented these appearances. I obtained almost twice as much material from the same length of intestines as I have been able to obtain from other cases of atrophy.

May 24, 1907.—*First injection*, 11:21½ a. m., 10 c.c. infant secretin; latent period ⅝ min.; ⅝ canula in ⅝ min.; 1/10 canula in 1 min.; tip of canula filled. In all, about ¼ canula in 2 min. Total duration of flow 2 min. *Second injection*, 11:27½ a. m., 10 c.c. cat secretin; latent period in ½ min.; ½ canula in ⅝ min. three successive times, then 1/3 canula in 1 min. three successive times; ¼ canula in 1 min.; ¼ canula in ⅝ min.; ¼ canula in 1 min.; ½ canula in 1 min.; 1/6 canula in 1 min. (at 11:40); ⅛ canula in 1 min.; 1/10 canula in 1 min.; making in all 3 9/10 canulas in 12 min. Total duration of flow 14 min. *Third injection*, 11:47 a. m., 10 c.c. infant secretin; latent period 1 min.; 1/6 canula in 1 min.; ⅛ canula in 1 min.; tip of canula filled in 1 min.; 1/10 canula in 1 min.; a total of 2/5 canula in ⅝ min. Total duration of flow 4 min. *Fourth injection*, 11:56 a. m., 10 c.c. cat secretin; latent period ½ min.; ½ canula in 1¼ min.; ½ canula in 1 min.; ½ canula in ⅝ min. three successive times; ½ canula in 1 min.; 1/3 canula in 1 min. twice successively; ¼ canula in ⅝ min.; 1/5 canula in 1 min.; 1/6 canula in 1 min. twice successively; 1/10 canula in 1 min. three successive times; making a total of 5 1/3 canulas in 15¼ min. Total duration of flow 17 min. Temporary slight inhibition at the beginning. Possibly due to the ether. Shown by the rate of flow during the first three minutes. *Fifth injection*, 12:18¼ p. m., 10 c.c. infant secretin; latent period ½ min.; 1/6 canula in ⅝ min.; tip of canula in 1 min.; 1/10 canula in 1 min. three successive times; tip of canula in 1 min.; 1/10 canula in 1 min.; making in all 6/11 canulas in 6⅝ min. Total duration of flow 6⅝ min.; The tip of a canula is equivalent to 2 drops of fluid. The duration is of more importance in this case as indication of activation than the quantity of juice secreted. *Sixth injection*, 12:34 p. m., 10 c.c. cat secretin; latent period ½ min.; ½ canula in ⅝ min.; ⅝ canula in 1 min.; ½ canula in ½ min.; ½ canula in 1 min. twice successively; 1/3 canula in 1 min. twice successively; ¼ canula in 1 min. three times successively; ¼ canula in ⅝ min.; 1/5 canula in 1 min. twice successively; 1/6 canula in 1 min. (at 12:48); 1/6 canula in 1 min.; making in all 5 1/7 canulas in 14 min. Total duration of flow 15 min. This cat reacted fairly well to cat secretin. The duration was good enough and the flow was steady, but in general it was slower than the average and required more manipulation of the canula, as if the intra-glandular pressure were not strong as usual.

I wish to thank Dr. S. B. Wolbach and Dr. A. R. Robertson, of the pathologic department of Harvard Medical School, for their kindness in placing material at my disposal.

[For the discussion, see the department of Section Discussions in this issue.]

YEAST CELLS AS A PROBABLE CAUSE OF ULCERATIVE KERATITIS.

PRELIMINARY REPORT.*

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It has long been admitted that flat yeast cells may be recognized as the cause of disease elsewhere in the living body. In 1900 Stoewar and Lundsgaard reported finding yeast cells in corneal abscesses. The following case, with its bacteriologic findings, is submitted in the hope that others may be stimulated to make similar observations.

*Read in the Section on Ophthalmology of the American Medical Association at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

Patient.—On Oct. 8, 1906, Mr. J. R. S. was referred to Dr. Keiper by Dr. C. B. Kern, because of ulceration of the right cornea. He was an employé of a company which makes box board out of straw.

Examination.—Examination showed a spot of ulceration on the right cornea in the upper outer quadrant, of about 2 mm. diameter and circular in outline. The spot was white and raised slightly above the corneal surface. Its duration was one week. The iris was inflamed, the cornea hazy and the vision reduced to 20/c.

Bacteriologic Examination.—The ulceration was scraped with a sterile platinum loop, and the exudate transferred carefully and immediately to a culture tube of Loeffler's blood serum and incubated. At the end of two days, a sufficient growth being manifest, it was examined by Dr. A. E. Allder, the associate of Dr. Keiper, and by Dr. Keiper himself. Several slides were prepared, methylene blue being the stain used. These all showed some rather large cells, resembling yeast cells, together with what appeared to be micrococci and diplococci. The culture was also examined in the hanging drop.

Treatment.—This consisted in scraping out the whitish mass which revealed a deep ulcer of the cornea. In the depths of this calomel was applied daily until healing took place. At home the patient instilled a 1 per cent. solution of atropin every three hours and every hour bathed the eye in water as hot as the back of the hand would stand, using the eyeglass. In ten days the ulcer had healed, leaving a scar.

The culture was submitted to Professor Severance Burrage, of Purdue University, who, with his advanced class in bacteriology, since has been diligent in trying to determine and to identify the organisms present, and he submits the following report:

PRELIMINARY NOTES ON MICRO-ORGANISMS FROM ABSCESS IN CORNEA.

A culture made in blood serum directly from the abscess in the cornea gave evidence of the presence of at least three different species of organisms, one giving a pinkish, another of yellowish, and a third of a whitish transparent growth. A microscopic examination of a stained preparation from this culture showed also at least three kinds of organisms. One was a micrococcus, another a diplococcus, and a third round cells, sufficiently large to cause one to suspect them to be yeast cells. Subsequent investigation proved this to be the case.

Description of Forms.—(1) The yellowish growth, when separated turned out to be a sarcina, in all probability *Sarcina lutea*, showing many of the characteristics of that organism. (2) The pink form was a small bacillus, non-motile, non-liquefying, and producing the pink color only after eight or ten days. This bacillus has rounded ends and measures about 1.5 microns in length and .65 microns in width. No spore formation was observed. I have been unable to identify this organism, up to this time. (3) A diplococcus producing a white growth on culture was also separated. The coccus varied from 1 to 1.5 microns in diameter, was distinctly aërobic and did not liquefy gelatin. It produced a white growth on potato. (4) The yeast gave the greatest difficulty in separating into pure culture. The cells varied greatly in size, so much so in almost every case as to make one doubt the purity of the cultures. The measurements showed variations from 2.5 to 6 microns in the normal shapes, and many of the elongated forms measured as much as 15 microns in length. From its microscopic as well as other characteristics, it is without doubt some form of blastomycetes.

Inoculation Experiments.—A number of inoculations on the eyes of guinea-pigs were carried out, and in every case in which a culture containing the blastomycetes was used, whether in mixed or pure cultures, there was evidence of ulceration in the cornea of the eye inoculated. The evidence of such ulceration was determined first by the use of the fluorescin test, and second by the formation of cicatricial tissue evident to the naked eye. Thus far none of the blastomycetes has been separated from any of the inoculated eyes, but the experiments are still in progress, with the prospect of interesting results.

DISCUSSION.

DR. FLAVEL B. TIFFANY, Kansas City, said that he had been able to find little literature on the subject and that he had had but little practical experience with yeast cells as a cause of ulcerations of the cornea. There are divers forms of ulcerations of the cornea. There are well-marked stages of each form. Many of the corneal affections are expressions of systemic diseases and take their etiology in specific germs peculiar to the state of the system. Many of the forms of ulcerations of the cornea are due to tubercular bacillus and to a low vitality of the general health. Nearly all cases of phlyctenular keratitis are in scrofulous subjects. Many cases evidently take their etiology in malaria, many to the effect of alcoholism. It is evident that no one form of microbe is responsible for all or any great part. The staphylococcus is frequently found in the affected cornea. In the dendritic form of ulcera there is a special bacillus. In some cases are found the aspergillus, in others the pneumococcus, in others the streptococcus, and in not a few the gonococcus, the latter being the most frequent. The conjunctival sac is swarming with myriads of bacteria, and in certain conditions some are liable to affect the cornea, especially if it is devitalized by trauma, such as trichiasis, distichiasis, trachoma, local or systemic disease, but neither clinical observation nor microscopic examinations show that any one organism is wholly or even largely responsible for suppurative inflammation, ulcerations or abscess of the cornea.

Ulcerations of the cornea are always a terminal stage of some inflammatory disease of that structure, unless it be that of trauma, resulting in its molecular death. In all corneal ulcerations the pathology is much the same. These ulcerations may arise without any obvious cause, but are usually traceable to injuries, impaired nutrition, infection, or extension from adjacent inflammations. Diphtheria bacillus, tubercle bacillus, aspergillus and the infectious fevers such as smallpox, scarlet fever, measles, typhoid fever, typhus, pyemia, etc., may induce ulceration of the cornea. Serpiginous ulcers with hypopion are usually due to the pneumococci. Other forms are more frequently caused by staphylococci and streptococci.

Locality has much to do with the form of germ that provokes these inflammations. People in a malarial locality are more susceptible to germ infection, especially the different yeast germs, as aspergilla and saccharomyces. As Dr. Keiper goes on with his experimental investigations more light may be expected on this interesting subject.

OCULAR NEURASTHENIA.*

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For several years I have been greatly interested in studying the relations of remote nervous conditions to eye work or ocular disease. My attention was, I believe, first centered on the subject by a number of cases of chorioiditis in young persons where syphilis, rheumatism and tuberculosis were excluded.[1] Other physical troubles were present, which I have since come to believe causes of uveal inflammation.

Five years ago a young girl who suffered from asthenopia, which I could not relieve, and who had certain accommodative symptoms which one would unhesitatingly attribute to hysteria, developed a small area of exudative chorioiditis. In short, there had apparently been a series of symptoms of an "irritative" type, if I may use the term, ending in objective inflammation. This

*Read in the Section on Ophthalmology of the American Medical Association at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Proc. A. M. A., 1896.

child recovered from the chorioiditis, but certain intestinal derangements persisted; and with them an inability to do much eye work. Of course the latter was put to the credit of the former chorioiditis. Two years ago these abdominal symptoms took on a close enough resemblance to appendicitis to justify exploratory incision. Chronic appendicitis was found, an adherent appendix removed, and for two years there has been no complaint of eye fatigue. The total refraction error is H., O. 75; all latent. Yet, during the stage which I have termed "irritative," the manifest error was oblique astigmatism, sometimes minus, again plus, while the near-point and far-point of accommodation approached each other, and the range of A. was reduced to two D. or less. Convex lenses restored normal near-point, concave normal far-point. Neither gave relief. Tests under mydriasis from atropin or hyoscyamin gave variable results and yielded only the transient therapeutic benefit, common from enforced rest.

Were those annoying eye symptoms hysterical, or were they, as indicated by disappearance after abdominal operation, due to this remote condition? If the latter, then a field of investigation is opened in a puzzling class of patients, and if we are physicians as well as oculists we must enter it. It is, then, from the standpoint of remote causes that I want to discuss certain stubborn eye symptoms. I have defined the patients as ocular neurasthenics, using the word neurasthenia in its derivative sense—weak nerves—and regarding the ocular state as one of extreme susceptibility to outside irritation. The nature of the irritation I do not pretend to define; whether reflex, and limited to nerve action, or through the vascular system. The word "irritation" itself is unsatisfactory, but I know of none better.

What, in general, are the ocular symptoms these cases present? Chiefly, early fatigue in eye work. When search is made for ocular cause, sometimes refraction error is found, and then, with fatigue, there may be symptoms characteristic of this error. For instance, astigmatism is associated with frontal headache; but cylindrical glasses do not increase working ability. Hypermetropia is attended with fading of print, but no help is obtained from correction. Muscular imbalance may, with fatigue, present ocular tension pains. But the muscular imbalance itself varies, and prisms, either worn or used for exercise, are worse than useless. What the patient seeks is increased working ability. He will willingly put up with the pain, and as a matter of fact does so, for these unfortunates do not belong to the indolent classes. Business men, school teachers, students, boys and girls who are bright and want to work, persons with responsibilities and full willingness to meet them, are the ones who come for relief. After repeated failure by optical correction, one is tempted to diagnose hysteria. Yet there are no such symptoms as crises, stigmata, anesthesias, etc. Nor is there amblyopia, contraction of fields or reversal of colors. The only ocular symptom I have noted which can be called typical of hysteria, is in the accommodation. The approach of the near and far points to each other, especially shortening of the far point is seen; yet, as in the case related, subsequent history takes from this an hysterical explanation.

If we are satisfied with this diagnosis, simply because correction of refraction error, muscular or accommodative abnormality fails to relieve, we not only show our own lack of thoroughness, but our patient is in a worse plight than before, for every therapeutic failure increases subjective tendencies. We are dealing with a class of patients who are either inherently neurasthenic or are made so by some temporarily exciting cause. For some reason the eye, in its functional activity, is the receiving end of the neurasthenic tendency. Successful therapeusis must take into consideration four factors: 1, the mental state of the neurasthenic; 2, remote physiologic lesions, psychical, emotional, social and industrial environments which can produce neurasthenia; 3, such lesions, physiologic functions and environments which experience shows can cause ocular lesion or affect ocular function; and, 4, the ocular conditions which can give neurasthenia an eyeward tendency.

THE NEURASTHENIC MENTAL STATE.

In dealing with it from the oculists' standpoint, it has seemed to me that, possibly without knowing it, the neurasthenic conceals the very thing we want. No matter how frank he or she may seem, regardless of the fulness or volubility of description, there is always something held back.

My friend, Dr. L. F. Barker, of the Johns Hopkins Hospital, has published[2] an interesting and instructive paper on "The Psychic Treatment of Some of the Functional Neuroses." He lays stress on what he terms "avowal." By it he means getting the patient willing to tell everything. Until we have accomplished this nothing can be done. Two or three examples will illustrate.

A boy at college could work only a few minutes, and correction of refraction error did not help. He attributed his troubles to a kick on the forehead in a hazing spree during his freshman year. After two years of worry on my part I sought his university advisor and found a few old conditions hanging over the youngster, and his senior work handicapped by fear that he would not graduate. I told him, when he proposed a week's rest in the country, to tackle those old conditions and get them out of the way. His mortification at my knowing this and abuse of the man he thought had told me—the wrong man, by the way—were wonderful; but he did it, and got well.

For eight years I tried to keep up with the vagaries of astigmatism and accommodation in a lady of social position and cultivation. She had, I thought, told me everything, until I learned from a gynecologist that she had a fibroid which she declined to have removed, but which often caused excessive hemorrhage. Her reason for not telling me and other oculists she had consulted was that she thought "it had nothing to do with the eyes."

A medical student, unable to work, with a refraction error of half diopter hyperopia, and a muscular balance, varying from orthophoria to five or six degrees of hyperphoria, accidentally admitted the antikamnia habit. He had taken the drug for relief of pain due to intestinal putrefaction; indicanuria was present.

A physician with half a dozen pairs of glasses from an equal number of oculists or opticians, all of them directed to removing accommodative strain, while his real error was a low astigmatism against the rule, was harrassed by fear of Bright's disease. Primarily, oversight of the real eye trouble and treatment of a symptom were responsible for failure to relieve. This failure produced the mental state which kept the man neurasthenic, and correction of astigmatism, without "avowal" on his part of the mental dread, would have done no good. Such cases take time and demand no little tact; often the

2. Internat. Clin., Philadelphia, January, 1907.

family physician or some friend is essential. Still, if cure is our object the remote cause must be found.

PHYSICAL AND PSYCHICAL CAUSES OF GENERAL NEURASTHENIA.

For present purposes, it will suffice to consider these under the third division, viz., physiologic function, and remote lesion or constitutional disease, which we know can both cause neurasthenia, and affect the eye, functionally or organically; also, the psychic state, which shows itself in ocular function chiefly because this function has so great a share in the individual's activities.

In a not inconsiderable experience I have thought that many cases of eye fatigue, associated to a greater or less degree with symptoms of so-called hysteria, were eventually traced to the existence of syphilis, hereditary or acquired. Sometimes the fact was unknown to the patient, and there was no obvious reason to suspect it. Again, it was concealed. Ametropia, to which symptoms were attributed, was either a coincidence or at most only an exciting ocular cause. The question of importance is this: Is it possible for syphilis to keep up an ocular irritation, simulating the symptom-complex of ametropia, before objective lesion is seen, or even without producing such lesion? Tabetic pains before ataxic symptoms, occasional hypersensibility of the pupil before tabetic rigidity, seem to point that way. A few years ago a lady of forty was treated in vain for headaches and eye fatigue by correction of refraction error and accommodative insufficiency. The rest treatment for hysteria was followed for months. She never seemed very ill and all of us thought the diagnosis of hysteria ample explanation of her condition. Finally she developed double optic neuroretinitis and then, with attention turned toward a cause for this, history of syphilis in the husband was found. Though a medical man, he had kept this information to himself, as well as a transient dermatitis from which his wife had suffered. Indeed, he was sure the whole infection in himself had been cured and the sole manifestation in his wife he had not attributed to the correct cause.

A lady, 35, married to her second husband, presented the tension pains characteristic of heteropho ria. Only hyperopic astigmatism with the rule and of low grade was found. Its correction did no good. Hysteria was again a satisfactory diagnosis to oculist and physician, till one evening at a concert she developed abducens paralysis. Then a history of syphilis, contracted in her first marriage, was obtained. The reasons for her concealing it were obvious.

I have tried in vain to relieve the fatigue symptoms of children by correcting ametropia, and later interstitial keratitis has shown why I failed. Diagnosis under such conditions may sometimes be impossible, and "hysteria" may perforce be our diagnosis till events show us the contrary, but this need not always be the case, and watchfulness for other causes of eye fatigue than coexistent ametropia will sometimes be rewarded.

A second remote condition often associated with eye fatigue is gastrointestinal derangement. Under the terms intestinal putrefaction, autointoxication, etc., we have of late years been studying a new series of causes in eye inflammations. de Schweinitz presented the subject to this Section at Boston last year in his usual able way. He showed here, as he and others have elsewhere, that we must recognize these gastrointestinal derangements as causes of uveal inflammation. The uveal tract, again, is active in eye function, and the question arises, can autointoxication, or whatever it is which produces inflammation, cause ocular irritation, leading to early fatigue, and bring about those accommodative phenomena which we are accustomed to call "hysterical?" The case narrated in the beginning is the only one I have met where definite uveal inflammation followed what seemed to be irritative symptoms, but I have seen numerous cases of ocular fatigue and hysterical accommodation associated with intestinal putrefaction, indicanuria, etc. Some have shown improvement in eye work after treatment directed to the intestinal condition. Another class of cases is made up of patients with symptoms leading eventually to operation for appendicitis. I have followed the surgical history of many of them and learned that the conditions found were catarrhal appendicitis, adherent appendix, etc. In these, decided improvement in eye function followed operation. It is difficult to connect ocular function with this remote irritation. The path may be that of general neurasthenia, circumstances which are unknown, making the eye specially sensitive. Whatever the explanation, the cause of ocular sensitiveness seemed to have been removed by abdominal operation. On the other hand, I have observed, as I believe all of us have, cases of eye fatigue *after extensive* abdominal or pelvic surgery. Surgeons do not hesitate to blame postoperative neuroses on adhesions; what I want to set forth, and what I think is a promising field of study, is that either through autointoxication or nerve irritation there is a close relation between abdominal lesions and eye function. Recognition of the fact is important, for many of these cases are susceptible of diagnosis and cure.

MENSTRUATION AND OCULAR NEUROSIS.

Another condition which demands attention in connection with ocular neuroses is the menstrual function. There are three points of view from which the relation of this function to the eye may be studied.

1. Uveal inflammation during the establishment of menstruation. Soelberg Wells and others called attention to this years ago, and it is sufficiently common to require no comment.

2. Exudative chorioiditis in young women with dysmenorrhea, scanty, excessive or irregular menstruation.

3. Ocular fatigue with normal menstruation.

The question of etiology between menstrual anomalies and ocular inflammation at once suggests some common cause for both troubles. What is known as "chlorosis," to which the menstrual anomaly is usually traced, means, so far as I can see, anemia, malnutrition or the intestinal manifestations of putrefaction; in a word, conditions which modern study has pointed out as causes of eye inflammation. It is of little consequence from the ocular point of view whether the menstrual derangement is primary or secondary to one of the conditions mentioned. Do irritative eye conditions, without visible inflammatory changes, occur with these remote conditions? I am sure they do; and when adequate explanation for ocular fatigue is not found in ametropia, or when fatigue persists in spite of its correction (especially if "hysterical" accommodation be present) our duty is to make judicious inquiry into the possibility of remote irritation. Failure to do so means that the patient loses confidence from our non-success, goes elsewhere, probably to have a similar experience, and gradually drops into a grave form of neurasthenia. I have seen a few cases of unexplained eye fatigue which

seemed to originate in use of the eyes during menstruation, and comfort was obtained by refraining from eye work at such time.

PSYCHICAL CAUSES OF OCULAR DEFECTS.

So far I have spoken only of physical conditions found in association with fatigue and with, so-called, hysterical eye defects. They are easy of recognition, if one thinks of them, and can usually be managed. Social, industrial and kindred causes of general neurasthenia sometimes seem to expend their force on the eyes. These causes take hold of the personal life of the individual and are hard to unearth. They are, I think, more common in business men, and women who have business responsibilities, than in other classes. A single illustrative case will suffice. A man with family, bookkeeper in a large department store, at age of forty, went to an optician because he found that after a day's work he had headache. An oblique astigmatism was incorrectly neutralized by cylinders. Metamorphosia resulted, and the optician's oculist were consulted. Convex "pasters" were added to the cylinders and for several months this combination added to the pain already started by twenty years of grind over books, only twice laid aside for a week's vacation. Fear of serious eye disease practically paralyzed this man's usefulness. It would seem that such a case should be clear to anybody, but it was not. I am sure there are grades of industrial nerve exhaustion which often go unappreciated. What is ordinary work for one is overwork for another. Conditions philosophically accepted by one fill another with dread. These cases usually present in manner, mode of expression or history, something which indicates that there is other trouble than coexistent refraction or accommodative error. Only fatigue symptoms are voluntarily given, the rest must be found out. The patient often insists that the eyes must be the cause of inability to sustain eye work. Such insistance, coupled with inadequate eye explanation, should lead to search for remote cause. A few direct questions will sometimes bring out essential facts, while again an open confession on our part that there is not enough eye trouble to account for the symptoms and that patient investigation will be needed may bring us a full "avowal" at a later consultation. This state of mind in the laity is not unnatural and we are partly responsible for it. Our teaching of the importance of ametropia as a cause of almost everything in the way of a neurosis—with some truth in all the claims—has simply been carried too far by the public. It is the business of the examining optician to whom these busy men and women often go first to encourage this mental state, and they do it fully. Our business is to recognize other causes as influencing ocular function; to get the patient to regard us as eye physicians, not merely eye examiners, and make him content to leave the case with us as physicians. We should not abandon him to ignorant choice of some other specialty, which he will make as he interprets his own vague and changing symptoms. Many persons whom we term "rounders" and who literally dump on us a whole satchel full of glasses, varying within a half diopter of each other, become so by insufficient diagnosis from the first man who sees them.

There are certain objective changes in ocular structures which I believe direct a neurasthenic tendency eyewards. They exist, too, without symptoms; at least without any of which the patient takes cognizance. On the other hand, neurasthenics not only find them out, but they center nerve weakness on eye functions. Such things are follicular conjunctivitis, scaly blepharitis, chronic conjunctival hyperemia, sometimes due to nasal trouble, etc. Treatment of such a lesion is useful; but if the physical, mental, emotional or industrial causes of the neurasthenia can be found, proper therapeusis becomes possible most of the time; without such information we are treating only exciting causes.

I purposely omit the general neurasthenic who is sent us by physicians to determine the possibility of ocular origin. This class is large, and when ametropia or heterophoria exists correction is most beneficial. But these patients must have treatment directed to the general condition. Such patients as I have been trying to present may easily become neurasthenics of graver form, and the responsibility for the outcome rests on the broadness of view and thoroughness of diagnosis on the part of the oculist to whom they apply for relief in the initial stage.

Treatment of these cases means, of course, discovery of the underlying cause. Correction of refraction error and muscular imbalance, provided the latter can be definitely enough determined to justify correction, are assumed. There is one therapeutic mistake we are apt to make, namely, "coddling" such eyes by rest. Now and then, as in cases of overwork or threatened general breakdown, rest and change are essential, but as a rule the patient is encouraged and the mental attitude improved if some eye work is allowed. The personal equation must be studied. While ocular neurasthenics may work in spite of discomforts, others have not the will power to do so, or are held back by fear of injuring their eyes. I think this mental state is especially common among well-to-do persons with little real responsibility. This is just what they need; neither rest nor travel gives it.

In the paper to which allusion has been made Dr. Barker gives "persuasion" and "suggestion" as two therapeutic measures available against general neurasthenia. The former, he argues, appeals to a higher cerebral center than the latter. In "suggestion" the patient is dominated by a superior will. By "persuasion" we gain his active co-operation. A certain class of ocular neurasthenics are successfully treated by making them convince themselves of the harmlessness and insignificence of their symptoms by persuading them to work in spite of pain. Fixing the time for eye work a little short of the fatigue point and gradually increasing it, the patient learns that he can work without injury. This is the first gain, and the rest often takes care of itself.

SUMMARY.

Fatigue symptoms, unrelieved by refraction correction, and often associated with the so-called hysterical accommodation, may be due to special susceptibility of the eyes to outside irritation, either physical or psychical. These cases may be classified as ocular neurasthenics, though they seldom, at least in the stage when they come under the oculist's care, present symptoms of general neurasthenia. They occur usually among industrious people. It is easy to dismiss them with a diagnosis of hysteria, but more thorough search for cause or subsequent development reveals an underlying condition capable of producing an objective ocular lesion, but at the time producing symptoms which, for want of a better term, must be termed "irritative." Among these causes are unsuspected syphilis, intestinal disorders, hemic and nutritive troubles, pelvic anomalies and

functional and psychic influences. The symptoms which should lead the examiner to look for such remote conditions are absence of ocular explanation for the symptoms or persistence of the latter, after ocular abnormalities have been corrected; "hysterical accommodation," varying refractive state. There are certain ocular troubles which usually cause little or no annoyance but which may direct a neurasthenic tendency eyeward. Relief of these somewhat lessens susceptibility, but only discovery of the underlying cause, with its medicinal or surgical treatment, cures. The aid of workers in other medical fields is often essential to correct diagnosis. Diagnosis of ocular hysteria, with its unsatisfactory treatment, is justifiable only after careful search for remote causes has given negative results.

It may not be amiss, finally, to state what seems to me adequate search for ocular cause of fatigue symptoms; in other words, to express my own idea of what constitutes thorough refraction work, and the time when the refractionist can feel that he has done all possible along that line. This seems essential because the need for search for remote causes is based on failure of ametropic correction to relieve, and there seems lack of accord in the profession as to how this work should be done.

1. The manifest refraction state should be determined by subjective tests, with range of accommodation and muscular balance. Should the latter be faulty its sthenic or asthenic quality should be determined. Comparison of this with the subjective refractive condition gives us an idea of the conditions under which the patient is working with fatigue symptoms. This comparison often affords an explanation, impossible if the two factors are studied separately.

2. Determination of objective refraction under complete cycloplegia, unless the age of the patient contraindicates the use of a mydriatic.

3. This should correspond with the objective findings, and when it does not the reason will usually be found in unaccountably incomplete cycloplegia.

4. Subjective tests after the ciliary muscle has regained its activity. Accommodative range and muscular balance are often different from the states found during the fatigue period, and are essential guides in determining what proportion of a total error should be corrected. These principles are well recognized, but I incline to the opinion that, especially in the use of a cycloplegic, and determination of accommodation and muscular balance after the ciliary muscle has regained activity, they are often neglected.

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[FOR THE DISCUSSION, SEE THE DEPARTMENT OF SECTION DISCUSSIONS IN THIS ISSUE.]

The Fear of Being Buried Alive.—A German newspaper recently gave a detailed account of the apparent death of a woman who later gave signs of life as she was being put in the coffin. The *Hygienische Blätter* states that a local physician investigated the case and found that a woman, subject to spasms, had fallen unconscious and her little children ran into the street screaming, "Mother is dead!" When the woman appeared on the streets a few days later some one wrote up the case as a revival from apparent death. The editorial urges on the press the duty of refraining from publishing items of this kind that will add to the widespread fear of being buried alive, unless the items can be authoritatively verified.

A PROTEST AGAINST THE EMPLOYMENT OF PARAFFIN INJECTIONS NEAR THE EYES

OR THE USE OF SOLID PARAFFIN IN THE CAPSULE OF TENON AFTER ENUCLEATION, WITH REPORT OF TWO CASES OF INJURY.*

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The following cases are put on record to call attention to the fact that paraffin injections near the eye, or a solid mass of paraffin placed within the capsule of Tenon itself, after enucleation, are not without danger. Dr. F. Gregory Connell[1] well says:

> The attempts at improvement which terminate unsatisfactorily are of even more import than are the cases which result favorably. The temptation is to report the successful operations and to postpone indefinitely a report of those cases which had an unfavorable outcome, in this way giving to one searching for a verdict on the method a biased conception as to the results one may reasonably anticipate. The satisfactory results are sufficient in themselves. The failures demand further attention and investigation, both from the operator and the profession at large in an attempt to discover the cause of the fault and to place it at the door of the method or of the one who employs the method.

In the two cases reported by me, the nature of the accident in the first case is similar in character to that already reported in a number of instances; that is, escape of paraffin into the tissues of the upper lid as a result of a paraffin injection at the root of the nose. The accident in the other case, however, is unique, so far as I am able to discover from a rather careful examination of the literature on the subject. In this case, a solid ball of paraffin had been placed within Tenon's capsule after enucleation for injury of the eyeball; in other words, the Frost or modified Mules operation was performed. The result was that a solid mass of paraffin escaped from the posterior part of Tenon's capsule into the apex of the orbit, pressed on the optic nerve and caused marked sympathetic irritation in the fellow eye.

Following is a detailed report of the two cases:

CASE 1.—Mrs. B. W., aged 35, was sent to me June 14, 1906, by a nose and throat specialist of this city, on account of a marked ptosis of the right upper lid, which had persisted for two years.

History.—This ptosis was the result of a single injection of paraffin, melting point 100° F., at the base of the nose, to correct a saddle-backed deformity of that organ. A swelling in the right upper lid appeared immediately after the injection of paraffin into the dorsum of the nose and was followed by a marked inflammatory reaction of the right upper eyelid which kept the eye closed for six weeks. After subsidence of the active inflammation the upper lid remained drooped 3.5 to 4 millimeters, and was in that condition when the patient came under my observation.

Examination.—A flattened lump could be felt under the skin of the upper lid and the fold of skin just above the lid, extending entirely across the lid laterally from the nose to the outer canthus. Several yellowish spots, from 3 to 4 millimeters in diameter dotting this flattened tumor, could be seen through the skin of the upper lid. The skin was firmly fixed to the tumor and had become hardened, or undergone the degeneration known as keratosis. The motility of the eye was unimpaired and the vision was 20/15, with a normal fundus. The left eye and eyelid were normal in every respect, with vision 20/15. There was also a lump on the forehead just above the

*Read in the Section on Ophthalmology of the American Medical Association at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. THE JOURNAL A. M. A., Sept. 10, 1903, p. 607.

root of the nose, about one-half inch in diameter, which was the result of the original paraffin injection into the nose. This had remained about the same size for two years.

Treatment.—June 26, 1906, under cocain anesthesia a horizontal incision one inch long was made at the upper margin of the upper lid and a mass of connective and fibrous tissue, together with particles of the paraffin were dissected away. Around the particles of paraffin was a straw-colored fluid, and it was this fluid that gave rise to the yellowish spots seen in the tumor through the skin of the upper lid. The wound was closed with five or six silk sutures and healed by first intention. The ptosis was completely relieved and the patient was most pleased with the result.

The macroscopic appearance of the tissue was similar to that described by Dr. M. L. Heidingsfeld, as were also the microscopic findings.[2] Dr. E. L. Oatman of this city made the microscopic examination of the tissue removed. In Dr. Heidingsfeld's two cases the paraffin had been injected into the cheeks by quack doctors to beautify the patient; in one about three years and in the other about two years before coming under his observation. A complete histologic report of the nature of the tissue removed from his cases, illustrated with excellent photomicrographic plates, is given by Dr. Heidingsfeld in his interesting and instructive paper. Of his conclusions as to the changes of paraffin prosthesis I shall have occasion to speak later.

CASE 2.—H. R., aged 7, was brought to me by his aunt, June 28, 1906, with the following history.

History.—One year ago his right eye was injured by a piece of percussion cap entering it. Ten days after the injury, because of symptoms somewhat resembling lockjaw, it was thought best to enucleate the eye; this was done by a New York oculist, and a solid ball of paraffin, melting point 120° F., (49° C.), was placed in the capsule of Tenon, the straight muscles sewed over it and also the capsule of Tenon and conjunctiva by means of the usual purse-string suture. A shell was placed over the stump a few weeks later and all went well until about six or eight weeks before the patient came under my care, when the artificial eye began gradually to squint inward toward the nose. After the convergence of the artificial eye, the left eye began to pain, to become reddened, and to run water; headaches also supervened after using the eye.

Examination.—When first seen by me the right, or prosthetic eye converged 35 degrees. When the shell was removed the stump was found much shrunken, but on palpation deep into the orbit with the finger a hard lump could be felt at the temporal side of the apex of the orbit, which evidently was the mass of paraffin which had escaped from the capsule of Tenon. The left eye had marked circumcorneal injection, there was decided lachrymation, and the eye was very sensitive to light, requiring a shade to be worn, and the patient complained of frontal headache.

Treatment.—On July 2, 1906, under a general anesthetic, an incision was made through the right shrunken capsule of Tenon, but not a particle of paraffin remained inside of it. The incision was then continued to the apex of the orbit to the hardened mass and a solid lump of paraffin, 20x14x8 millimeters, almond shaped, was removed with forceps, and also a small fragment of paraffin, 7x5x3 millimeters. The orbit was dressed and the patient was discharged after having been under observation one week. The very pronounced sympathetic irritation in the left eye was speedily relieved after the removal of the mass of paraffin from the apex of the orbit. The paraffin was not disorganized or disintegrated in the least, but was in solid mass without invasion of any kind of cells.

Accidents similar to the one which occurred in Case 1, that is, extrusion of paraffin into the tissues of the eyelids have been reported by a number of observers, and extrusion of paraffin from the sclera and the capsule of Tenon anteriorly, following Mules and Frost operations, when paraffin was used to form the artificial stump, have been reported in several instances. But extrusion of paraffin into the apex of the orbit from the capsule of Tenon, until now, has not been reported, so far as I am able to discover. In this respect, therefore, Case 2 is unique. The cause of this peculiar accident in Case 2 was due, in my opinion, to faulty technic on the part of the operator, the capsule of Tenon in all probability being punctured posteriorly and to the temporal side at the time of the operation. After a few months the solid mass of paraffin escaped through this opening into the apex of the orbit, pressed on the optic nerve and finally produced marked sympathetic irritation, which undoubtedly, had it not been removed, would have resulted in a true sympathetic inflammation of the fellow eye.

Ramsey,[3] in a report of a series of thirty-four cases (twenty-two at one time and twelve later), in which paraffin at 40° C. was injected into the capsule of Tenon after enucleation, had four failures from the paraffin extruding anteriorly. A more serious complication resulted in one case. He says:

> Once sympathetic inflammation followed enucleation and injection; but I do not think that any blame can be attached to the paraffin. The case was one of septic wound of the eyeball, in which, after enucleation, the optic nerve was found to be acutely inflamed. Strict antiseptic precautions were taken at the time of the operation and the socket healed up in a perfectly satisfactory manner. Nevertheless, the amount of sepsis was a contraindication, and apart altogether from the question of sympathetic disturbance, I would not use paraffin again under similiar circumstances.

In this latter conclusion Ramsey is entirely correct, in my opinion. But I would go further and say that neither paraffin nor any other solid substance should be confined in the sclera or Tenon's capsule for the purpose of forming an artificial stump when septic conditions are present. First, because such operations usually fail from the severe inflammatory reaction and later extrusion of the solid body, and, second, sympathetic inflammation may follow as in the case reported by Ramsey.

Oatman,[4] Alter,[5] Sucker,[6] Spratt[7] and others who have used paraffin (especially paraffin with high melting point, 60° C. or higher) consider it, when used in a solid ball within the capsule of Tenon, the very best substance yet tried to form an artificial stump after enucleation of the eye. They claim (1) that it is non-irritating, (2) that it is least likely to be extrudated, (3) that the wound heals voluntarily if part of the substance should be extrudated (Oatman), (4) that the material is cheap and can be easily sterilized and made into the proper sized balls for insertion, (5) that there is no danger from breakage, (6) that the paraffin ball soon adapts itself to the shape of the cavity and is held in place by connective tissue growth into it.

As to paraffin being non-irritating, it is interesting to cite in this connection a paper by Dr. Robert Kirk,[8] entitled "Paraffin Cancer." Dr. Kirk reports several cases of epitheliomata occurring in workmen employed in refining solid paraffin in the mineral oil districts, while the shale miners and retort men employed in the same oil regions were free from such growths. In regard to those who work in refining paraffin having a tendency to epitheliomata he says:

2. Jour. of Cut. Dis., Nov. 19, 1906, p. 513.

3. Lancet, Jan. 31, 1903; Ophthalmic Rev., London, July, 1903.
4. Medical Rec., 1903, lxiii, p. 372.
5. Ophthalmic Rec., March, 1903.
6. Ann. of Ophthal., January, 1903.
7. Arch. Ophth., 1905, xxxiv, No. 2.
8. British Med. Jour., 1905, ii, p. 1528.

This held in particular some thirty years ago when the men came in contact with the paraffin. Superheated steam is now employed for refining the paraffin and as a result the men are not attacked with the growths that they formerly were. Formerly the men worked with bare arms and as a result many ulcers formed on the arms, most of them non-malignant, but a considerable proportion became malignant and exhibited all the characteristics, both macroscopically and microscopically, of epitheliomata. Early excision gave always satisfactory results; but one case which was neglected resulted fatally. One patient, aged 71, had three such tumors removed successfully.

Dr. Kirk concludes: "These tumors were all epitheliomata, and the conclusion one must come to is that long-continued irritation certainly does predispose to the production of malignant disease."

The keratosis of the skin produced by the injection of paraffin beneath the skin and the pathologic changes which result therefrom bear a strong suggestion of malignancy, which certainly lends some degree of probability to Dr. Kirk's conclusions, and also that paraffin may act as such irritant. The conclusions of Dr. Heidingsfeld[9] in the paper already cited are significant in this connection, to wit:

The changes of paraffin prosthesis indicate that the paraffin is slowly removed and gradually replaced by fibro-connective tissue. Its removal is effected by phagocytosis, by means of successive invasion of inflammatory leucocytes and their successive degenerations. The prosthesis acts as a foreign body by its mere presence, and becomes promptly encapsulated with newly formed fibro-connective tissue. It stimulates the surrounding tissue to proliferation and adenomatous changes resembling those of early malignancy. The segregations of the encapsulated paraffin in rounded cavities give the conditions a characteristic Swiss cheese-like appearance, and the successive degenerations of invading phagocytes, corresponding with the duration of the process and the size of the encapsulated paraffin, are areas of flattened non-enucleated cells, giant cells, and fibro-connective tissue. These areas are separated by an areola of fibro-connective tissue, which gives to the whole prosthetic area an alveolar-like structure. Its analogy to tuberculosis is marked. The paraffin, like the bacilli, acts as a foreign body, incites a leucocytic invasion, which undergoes degeneration and caseation. This in turn excites another invasion with the formation of a large number of giant cells from the agglutination of the cell bodies and the preservation of the nuclei. The final goal of each is a complete fibrosis. The disappearance of the paraffin by oxidation or by its movement in solid form along lymph channels is improbable and not confirmed by histologic or physiologic facts. The histologic appearances also fail to furnish any special reason for the crystalline character of the paraffin favoring leucocytic invasion.

The dangers of embolism from injections of paraffin have already been pointed out by other writers, and I merely cite some of the cases reported to call attention again to this phase of the question. As a result of paraffin injections to correct nasal deformities, instances of embolism of the central retinal arteries or thrombosis of the ophthalmic vein with loss of vision have been reported. Leiser was the first to report a case of this nature.[9] The blindness in this case was supposed to be due to a thrombus of the ophthalmic vein rather than to an embolism of the central retinal artery. Following an injection of paraffin into the nose the patient suddenly became unconscious, but was revived by artificial respiration and by injecting stimulants. On recovering consciousness the patient noticed that he was blind in the left eye. The paraffin in this instance is supposed to have entered the ophthalmic vein through the *vena dorsalis nasi*.

9. Vereinsbeilage der deutschen med. Wochschr., April 3, 1902.

Hurd and Holden[10] report a carefully observed case of embolism of the central retinal artery, the eye being observed twenty-five minutes after the injection of the paraffin for the correction of a saddle-backed deformity of the nose. In this case, as in the one reported by Leiser, the accident happened at the third injection of paraffin. A mixture of paraffin (130° F.) and ointment of white vaselin, having together a melting point of 110° F., of semi-fluid consistency, was injected by Dr. Hurd. Immediately after the injection the patient rubbed his right eye and remarked that he could not see with it. A little later ecchymosis appeared about the tip of the nose, indicating that a vein had been punctured. On examination by Dr. Holden twenty-five minutes after the injection the right pupil was large and did not respond to light, and, while there were subjective symptoms of objects, there was no objective perception of light. The ophthalmoscopic examination showed the retinal veins normal, but the main inferior branch of the central artery of the retina and its branches were empty and collapsed. The main superior branch contained some blood, but when gentle pressure was made on the eyeball the blood column was broken up and the blood flowed backward into the central artery. Treatment consisted in stimulating the circulation with digitalis, dilating the peripheral vessels by inhalations of nitrate of amyl and deep massage of the eyeball. After two hours of such treatment the retina was entirely bloodless, due to the deep massage of the eyeball, but the embolism was not dislodged. The margins of the disc were slightly blurred and the retina near the large blood vessels was hazy. Three hours later blood had returned to the retinal veins and in broken columns to the superior artery. The usual cherry-red spot was present at the macula. Vision was not restored.

Just how the embolism was conveyed to the central retinal artery in this case the authors are unable to explain.

Dr. Evan Evans who kindly made a physical examination of the patient, suggested the possibility of there being a persistent foramen ovale between the two auricles through which the solid body entering the veins might pass from the right to the left auricle and, avoiding the pulmonary circulation give rise to a crossed or paradoxical embolism, so-called, somewhere in the general arterial circulation. Since communication of considerable size between the auricles is not infrequently found at autopsies this explanation seems possible.

Injections of paraffin into other parts of the body have resulted in pulmonary embolism. Pfannenstiel[11] reports such a case in which he had injected a large amount of paraffin (113° F.) around the neck of the bladder to relieve incontinence of urine. Coughing, vomiting, chill, rapid respiration with cyanosis and dyspnea developed after the patient left the hospital; fortunately the patient recovered. Pfannenstiel is of the opinion that pulmonary embolism was responsible for these symptoms as a result of the injection of paraffin. According to Kummel, cited by Hurd and Holden, fatal cases of pulmonary embolism have been observed as a result of paraffin injections.

Sloughing of the tissues due to the injection of too much paraffin, or to the injection of paraffin into scar tissue, are other complications of a less serious nature which have been reported.

Taking into consideration the fact that sight may be

10. Medical Rec., July 11, 1903.
11. Centrbl. für Gyn., 1901, ii, p. 33.

destroyed, and that life itself may be sacrificed from the injection of paraffin into the tissues to correct slight deformities, or to make the patient more comfortable, it seems to me worth while to call attention again to such dangers. Certainly all mishaps from the use of paraffin injections should be reported that the technic may be improved or the method abandoned if it proves unsatisfactory or too dangerous.

[FOR THE DISCUSSION, SEE THE DEPARTMENT OF SECTION DISCUSSIONS IN THIS ISSUE.]

PREMIUMS PAID TO EXPERIENCE.*

[A critical study of 5,000 consecutive cases seen in private practice with a tabulation of the different ocular diseases which have been under observation, an analysis of some of the results obtained by treatment, and a résumé of the knowledge and experience gained in certain lines of ophthalmic practice.]

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ASSISTED BY GEORGE W. VAN BENSCHOTEN, M.D.

PROVIDENCE, R. I.

In twenty-five years of active work in the practice of medicine there has accumulated a vast storehouse of experience, from which may be drawn guidance in the problems of our life, as well as knowledge which prevents the repetition of mistakes and acts as an incentive to better effort.

Several years ago, actuated by curiosity to learn how many of my patients with diseased conditions of the posterior section of the eye received any marked benefit from treatment, I began this record; the opportunity to present to this Section the results of personal observation prompted me to complete the series of cases and, with the valued assistance of Dr. George W. Van Benschoten, to offer the results of our labor.

It is my aim to state, as briefly as possible, some of the lessons I have learned, not to pose as author or teacher, neither to magnify my successes nor to belittle my failures, but, with the greatest respect for the opinions of others, to offer a paper based solely on my own experience. Pardon is asked for the necessary frequent introduction of the ego.

The cases selected are consecutive, but are taken from records of different years extending from 1890 to 1907, and they are classified according to the predominant pathologic condition, in general assumed to be the one for which the patient sought advice.

TABULATION OF CASES.

Anomalies of:	
Refraction	3,188
Extrinsic muscles	157
Diseases of:	
The lids	176
The conjunctiva	387
The cornea	349
The lens	150
The lachrymal apparatus	66
The sclera	20
The iris	116
The chorioid	53
The retina	97
The optic nerve	55
The globe	40
Glaucoma	39
Amblyopia	27
Sundry diseases and conditions	80
	5,000

*Read in the Section on Ophthalmology of the American Medical Association at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

RELATIVE IMPORTANCE OF REFRACTION.

The most impressive fact of this study is the relatively large number of cases of refraction. Of my patients 67 per cent. have sought or needed correction for ametropia, and there is no reason to believe that my experience is exceptional.

It would seem that the pathologic conditions which occupy nearly three-fourths of our time should receive adequate discussion in our scientific meetings and that current literature should show the importance of this branch of our work, but as a matter of fact the number of papers on this topic which have been presented to this Section during the last five years is but 20 in a total number of 165, and of 621 original communications in ophthalmology during the year 1906 but 58 were on this subject, and of 21 articles on eyestrain 16 were by one author. If we knew all that there is to know about refraction, or if the action of the extrinsic ocular muscles could be definitely stated under all conditions, then this plea would fail of significance, but however much I disagree with some of the statements of my friend, Dr. Gould, I wish heartily to endorse what he has said regarding the importance of accurate mensuration of refractive errors and to decry the neglect on the part of the profession to give anything like adequate attention to this part of our work.

It is true that many of us at times do very bad work; were it otherwise those cases of hyperopes wearing concave lenses, of undiscovered and uncorrected astigmatism, of cylinders placed at improper axes, of unrelieved asthenopia which come to us from reputable men, and the same cases which escape our attention and go to the other man, would not occur so frequently. There is a true refractive correction for every ametropic eye and—within certain small limits—this should be discovered and measured by every man in the same way. This diversity of results accounts for a second fact impressed on us in a general view of these cases, and that is that the length of time that the average patient is under our observation is very short. Two or three consultations and the patient is gone, if relieved, to return in some years with an increasing presbyopia or an idea that his glasses need changing; if unrelieved, to go the rounds of the profession seeking the relief that we vainly tried to give.

When we *know* about refraction our patients will cling to us long enough for us to remember their names without recourse to our records, and will be in reality patients instead of customers.

ERRORS OF REFRACTION.

In correcting errors of refraction the desideratum has been the comfort of the patient and the relief of asthenopia with the maximum degree of vision and not the absolute correction of every deviation from the emmetropic eye and this allows for the hyperope at times a full correction, at others a partial one, a recognition of the fact that the axis of an astigmatism for close work is not always the same as for distant vision, a varying limit of presbyopic correction and the avoidance of any hard and fast rule, it should insure as complete and exact knowledge of the ametropia as possible but allows a prescription varied to meet the habit or idiosyncrasy of the patient.

REASONS WHY INCORRECT RESULTS ARE OBTAINED.

There are three reasons which explain why different results may be obtained in the same patient by equally competent observers.

1. *The Personal Equation of the Examiner.*—There is nothing more likely to cause failure than hurry. We can not do good work and do too much. The estimation of refraction is a painstaking task, and it is the salvation of the young man that he can afford the necessary time to discover what we in our haste overlook, and his practice grows accordingly till he in turn also gets too busy for accurate work, when it passes to another. When I do not readily work out the problem under consideration I have learned to stop and to try again another day. It is better to impress your patient with your desire to be thorough than with your ability to do quick work.

2. *The Personal Equation of the Patient.*—In estimating the visual acuity it is essential that we learn and record the maximum degree of vision; the ordinary methods of examination are faulty in this respect, because the average patient does not understand that this is what we desire. Placed before the ordinary types he is asked to read the lowest line that he can, as the element of time precludes our asking him to read all the letters on the card, but in nine cases out of ten he reads a line or two above that which represents his maximum vision and it is only by repeated questions and trials that we finally gain the desired result. If our record is made without this protracted effort it is erroneous and subsequent tests will show a discrepancy.

I have for several years used the Monoyer card with the metric system. This is so arranged that I can illuminate each line at will, and I always start with a line that I think the patient can not read and in turn bring before his vision the larger letters till he reads them correctly. There is just as good reason for this as there is—in the measurement of the prism strength of the ocular muscles—to start with the stronger prisms first, and this Section has already stamped that method with its approval.

3. *An Appreciation of the Actual Need of the Patient.*—It is an every-day experience for all of us to have patients say that they are unable to wear the glasses which have been prescribed for them by some other oculist, and it is my frequent experience to find that this is due to a failure to ascertain for what purpose the glasses are to be used. The patient may be a weaver with a near point 20 to 30 inches from the eye, a seamstress with a working distance of 18 to 20 inches or a die sinker or engraver working at a distance of only 8 or 10 inches; in such a case to give a presbyopic correction estimated for the ordinary reading distance insures failure. Musicians, typesetters, linographers, etc., require glasses different from those appropriate for students, professional and business men of the same age.

A knowledge of the general condition of the patient, his power of accommodation for each eye, his ability to use it for prolonged effort, a consideration of the nervous tone present and the possible tendency of the patient to complain of trivial symptoms, as well as the existence of that form of neurasthenia which magnifies every ocular symptom and seeks for relief from every possible pain and ache by spectacles, are factors to be considered quite as much as the mechanical measurement of the ametropia.

CYCLOPLEGICS.

In my experience the use of a cycloplegic has become a necessity and no method is alike so accurate in results and so comfortable to the patient as the gelatin discs devised by Dr. Wood. I have measured the hyperopia in fifty young persons under homatropin and later under atropin, and the maximum latent hypermetropia developed under atropin over that shown with the weaker drug was in one case 2.5 D., in two cases 2.0 D., in four 1.0 D., and in all the rest varying amounts from 0.25 D. to 0.75 D. Between the method of using the discs and the frequent instillation of an aqueous solution there is not enough difference in results to pay for the annoyance it causes the patient and the time it occupies. I have used homatropin in over 20,000 cases in private and hospital practice and I have seen glaucoma follow its use but once, and I have always felt that the symptoms first presented were those of an oncoming attack of this disease which I mistook for asthenopia.

EFFECT OF A CHALAZION ON VISION.

In the literature on the subject I have not seen the fact mentioned that the presence of a chalazion sometimes causes a marked diminution of vision and a decided change in the axis of any existing astigmatism. In this series I have seen two cases which show this to be true. Both were patients who had been under observation for a number of years, and in each I knew the exact refractive error and more than once have I seen the vision fall from normal to 0.4, although improved by a change in the axis, yet in 24 hours after the removal of the retention cyst again become normal under the original correction.

FOGGED VISION.

I have been much interested in Dr. Dixon's theory of "fogged vision," and in a score of intractable neurasthenics I have followed the plan of keeping the vision a little below normal by overcorrecting the manifest hypermetropia, but I have failed utterly to gain the beneficial results claimed by the author, although I admit the value of the method in estimating the amount of latent error. The asthenopic symptoms have, as a rule, been rather increased and the constant feeling of effort which is engendered is not conducive to the comfort of the patient and comfort is what we seek.

VALUE OF REPORTS OF CASES.

It is a source of wonder to me how certain men can get results from the correction of ametropia which others with the same methods can not obtain, and I believe that many cases are reported as relieved when they have merely passed from observation and they are assumed to have been cured. Even if pains are taken to write to the patient and inquire as to the present condition, the answers are not always reliable. I have addressed such letters to several hundreds of patients and have flattered myself that my results were eminently satisfactory, only to learn afterward that a dislike to hurt my feelings has prompted many of them to report themselves as cured when they were even then under treatment elsewhere for the same condition.

In a recent article on migraine in the *Ophthalmic Record* the relief by proper glasses is so extraordinarily uniform that I believe the replies are not to be relied on and the force of any conclusion is necessarily weakened.

CHOREA AND EPILEPSY.

Two cases of chorea and one of epilepsy were referred to me in this series of cases for examination, and in none were found that error of refraction or muscular trouble which is so frequent in the reported cases of those who assume that such errors are a factor in the etiology of functional nervous diseases. Some years ago, at the request of the late Dr. Keene, I examined a large num-

ber of these cases in the state institutions at Cranston, R. I., and I have records of over a hundred choreic and epileptic patients in private practice. I have done tenotomies, as well as graduated tenotomies, and in but two cases have I seen improvement enough to warrant the assumption of any therapeutic value in the operation. I have under my care two epileptics who have been reported as cured by tenotomics, but the condition is quite as bad as before the cure.

LATERAL SPINAL CURVATURE AND OBLIQUE ASTIGMATISM.

Two cases have been seen which bear out Dr. Gould's statements of the effect of oblique astigmatism on spinal curvature.

CASE 1.—Oct. 7, 1901, H. H., aged 17, American school girl, complained of pain through eyes and head extending down the back and aggravated by study. Some months previously her physician had noticed a lateral curvature of the spine and an attempt had been made to correct this deformity by the daily use of calisthenics. She was wearing glasses given her by an optician, O. D. + 0.50 C. 90° — O. S. + 0.75 C. 90°, and with them got 0.7 vision; but there was noted at once a tendency to tilt the head to one side when using them. Under a mydriatic the vision was as follows: R. V. = 0.1 + 1.75 (+) 0.50 C. 75° = 1.0; L. V. = 0.2 + 1.25 (+) 1.0 C. 100° = 1.0. She was ordered O. D. + 1.0 (+) 0.50 C. 75°; O. S. + 0.50 (+) 1.0 C. 100°, for constant wear.

April 19, 1902. The patient had improved greatly; the asthenopia was gone and the spinal defect was not noticeable. The gymnastic exercise had, however, been continued and the beneficial result was attributed to this alone.

CASE 2.—May 31, 1902, Mrs. H. F., aged 36, had poor vision. When reading had a sensation as if the right eye were being pushed forward, with pain extending to neck and shoulders, and there was a desire to turn the head to the right; she was a neurasthenic; had recently had an ovariotomy performed and was just from Dansville Sanitarium, where she had been treated for spinal curvature. R. V. = 0.7 under a mydriatic = 0.1 + 2.50 (+) 0.50 C. 45° = 0.8; L. V. = 0.5 under a mydriatic = 0.1 + 1.50 (+) 1.75 C. 165° = 0.9. I ordered + 2.0 (+) 0.50 C. 45°; + 1.0 (+) 1.75 C. 165°, for constant wear.

Feb. 3, 1905. There had been no complaint of spinal trouble since wearing glasses and the asthenopic symptoms were entirely relieved; she was still neurasthenic and had recently had an operation for floating kidney, but the lateral curvature was not present, although when the glasses were laid aside she assumed the same position noted in 1902, and there was soon felt the discomfort referred to one eye.

FULL CORRECTION IN MYOPIA.

I have had an opportunity in this series of cases to watch five cases of "school myopia" for periods of over ten years. In four of them full correction, the occasional use of atropin during vacations, attention to hygienic rules and an increase in the strength of the lenses as the myopia increased, at least twice a year, so affected the myopia that the yearly increase was in a constantly diminishing ratio. In each it resulted in a condition of moderate myopia which has been stationary for some years. In one case the increase in myopia was at the rate of one-half diopter every six months for nearly two years. Four years then elapsed without attention and the myopia during that time increased nearly seven diopters and in the three following years to 12 D., since which time it has remained stationary. My experience in these troublesome cases has been uniform, and I am a firm believer in the full correction.

CONVERGENT STRABISMUS.

There have been 70 cases of convergent squint, and of these I have been able to follow 60 cases long enough to note the ultimate result of treatment. In some of them (8) the age of the patient precluded an accurate test of vision, and reliance was placed entirely on retinoscopy in estimating the refraction and the existence of an amblyopia could only be surmised. I have attempted to classify them as follows:

Patients.	Success.	Partial Success.	Failure.
In which there was amblyopia and the vision of the squinting eye was not improved to more than 0.1....	..	2	8
In which the vision of the amblyopic eye was materially improved by glasses	4	5	5
In which the vision with correcting lenses was nearly equal in each eye. In most cases alternating squint	12	5	6
Tested by retinoscopy only.....	1	2	5
Tenotomy or advancement	5	..	..
	22	14	24

Some of the 24 unsuccessful cases ultimately came to operation, but, with one exception, the original tenotomy was done for the cosmetic effect alone. In the successful cases the correcting lenses were worn for some years, and the fact that when they were removed the squint returned was not considered a reason for calling the case unsuccessful. The treatment was, 1, as nearly a full correction as possible; 2, the frequent use of atropin; 3, the occlusion of the fixing eye for definite and regular periods, and, 4, the cultivation of the fusion sense by systematic exercises. Experience has taught me that there are two classes of cases where persistence in non-surgical measures will effect a cure:

1. Those cases in which the vision of the amblyopic eye is materially improved by lenses.

2. Those in which the vision of each eye is nearly equal, and in all cases where there is absolutely no effect on the convergence from the prolonged use of atropin, I do not hesitate to advise an operation, always with a plain statement of the possible subsequent deviation. That this deduction is fairly correct is proved from a study of one hundred other cases occurring in the practice of Dr. Van Benschoten and in my own.

In no case where the amblyopic eye remained unimproved was there a successful result; while in the cases of alternating squint there was almost uniform correction of the deformity, and in the second class of the table 40 per cent. were successful and 30 per cent. partially so. There were 26 cases of paralysis of one or more of the extrinsic muscles which are not included in this table.

DISEASES OF THE LIDS.

Lupus.—Two cases of lupus of the eyelid have been under observation. In one the Roentgen ray was used, resulting in an extensive burn with great deformity and in no way affecting the ultimate result. In the other the "Finsen ray," so called, was used for thirty-two sittings. At first this treatment seemed to lessen the induration and heal the ulcerated surfaces, but the effect, if real, was but transitory and the disease steadily progressed. The remarkable results attained by Finsen can not, in my opinion, be duplicated by the man who has at his disposal only the commercial lamps to be obtained in this country which utilize but a moderate voltage. One case, not included in this series, has been under observation and without using either of these methods of treatment has remained quiescent and has not proceeded to the ulcerative stage.

DISEASES OF THE CONJUNCTIVA.

I regret that in these cases I am unable to give the bacteriologic findings in a sufficient number to make them of greater value, but I have used the silver salts often enough to warrant me in expressing a decided opinion on their relative value. There is, to my mind, no remedy which equals silver nitrate, no remedy that can be relied on in critical cases like this old-fashioned drug which has, in a measure, been superseded by newer synthetic compounds. Protargol I have discontinued because I have had marked argyrosis in several cases. Argyrol in 20 per cent. to 50 per cent. solution, if used frequently, has great value, but it is merely an adjuvant to the nitrate, and in a somewhat extensive hospital practice I have not been able to agree with Dr. Standish regarding its efficiency.

In 23 cases of ophthalmia neonatorum, in this series, 6 eyes were lost before I saw them; 3 were treated with argyrol alone, with corneal ulceration in 2; protargol was used in the treatment of 2, with no corneal affections, and 15 were treated with a solution of argentic nitrate, with one resulting scar.

The law compelling midwives to report all cases of inflamed eyes in the newborn has been on the statute books of Rhode Island for more than twelve years. There has been in that time no arrest or prosecution for violation of the law, but the publicity gained by its enactment has, nevertheless, been of great value, for the frequency of cases of ophthalmia has certainly been lessened by a half in the last decade.

DIONIN IN TRACHOMA AND PANNUS.

The remarkable and almost uniform improvement, which has followed the use of dionin and cupric sulphate in trachoma with pannus, is one of the few positive results I have attained with any of the newer drugs.

The various operations of curettage, grattage and scarification have been tried only to be abandoned, while reliance has been placed on the topical application of copper sulphate. Since the advent of dionin I have used it in the powder form, followed in a few minutes by the copper salt, with the result that the pain is lessened and the subsequent discomfort diminished and the cornea has cleared in a way I have never before experienced in my treatment of these cases. Either one used alone has not the effect of the two combined. Dr. Van Benschoten has in his cases used dionin with a solution of mercuric bichlorid, and with the same success, so it is possible that I have ascribed too much to the cupric sulphate, but it is the combination apparently which is efficacious.

DISEASES OF THE CORNEA.

Edema of the cornea is a rare condition and is not even mentioned in many text-books. I have read of but one case in medical literature, and I have seen the following: An infant, two days after instrumental delivery and still showing across the lids and forehead the imprint of the blades of the forceps, presented a slight haziness of the cornea which rapidly increased till the whole anterior chamber was of a milky, white color. When first seen by me it had the appearance of an anterior dislocation of an opaque lens into the chamber. There was no reflex, no increased tension, no ciliary injection, and I was unable to see the iris in any portion. I considered the case to be one of traumatic dislocation, and it was a week later that beginning absorption of the cloud showed that there had been an infiltrate into the stroma of the cornea which cleared exactly as the infantile lens is sometimes absorbed after a discission, allowing me to see the exudate between the limiting membranes of the cornea, the entirely normal and active iris and clear pupil. In two months the cornea was quite transparent.

CORNEAL ULCERATION.

In the treatment of ulcers of the cornea, the usual methods prevailed and with the usual number of maculæ. One drug, however, once exploited but now forgotten by many, has proved of such service in all suppurative forms of keratitis that I have continued its use for fifteen years. Pyoktanin (yellow), although, according to bacteriologists, of weak germicidal activity, in my hands has been of great service. In one-half to 1 per cent. solutions, so dropped into the eye that it trickles slowly over the cornea, it has prevented the loss of tissue which insures a leukomatous condition, has relieved pain and hastened the healing process. In two cases of infection following extraction, this was my main reliance and the fortunate healing with a clear cornea was ascribed to its virtues. In sclerosing keratitis, its use with atropin and dionin has taught me that we can almost promise the patient a complete recovery in from two to three months. In these cases I do not deny the superior value of dionin, but in this series I have seen eleven cases of this disease, and where the three drugs were used the duration of the disease was lessened by some weeks. In maculæ of the cornea of recent origin the use of subconjunctival injections of a physiologic saline solution and powdered dionin yielded in a few cases brilliant results.

DISEASES OF THE SCLERA.

One of the most troublesome diseases I have been called on to treat is scleritis, for without a definite knowledge of its etiology our treatment is necessarily symptomatic. Eleven of the standard text-boooks agree on rheumatism as a cause; five mention gout, five scrofula, six ascribe the disease to syphilis and a like number to the irritation produced by light, wind and dust, while four say that menstrual disorders are a factor. In 16 cases of well-marked migratory scleritis I have been able to get a history of rheumatism in all but one; of syphilis not at all; in most of them there has been a general disturbance of health in greater or less degree, but, aside from the rheumatic or gouty diathesis, no uniform etiologic factor. A recent statement that a large proportion of patients suffering from scleritis show a distinct reaction to the tuberculin test may be of future value, but I have not had my attention called to the possibility of tuberculosis by any other presenting symptoms.

The treatment has been at all times devoted to the lithemic state, in spite of the claims that there is no such condition, and the local use of either atropin or pilocarpin. There seems to be no way of telling which drug will prove most efficacious save by trial. The protracted course of the disease and its frequent recurrence indicates the necessity for more careful study and consideration on our part. In a small proportion of the cases, pilocarpin proved an effectual remedy, but in over half of them a secondary iritis necessitated the use of atropin before the conclusion of the attack. Argyrol was used in several without effect. Ice and heat were alike inefficient. Adrenalin was of service only in temporarily blanching the parts and subcutaneous injections of pilocarpin muriate did not have material effect.

DISEASES OF THE RETINA.

Seventy-one cases of retinal disease came under my observation in this series and are classified as follows:

Hemorrhagic retinitis	11 cases.
Albuminuric retinitis	30 cases.
Albuminuric retinitis of pregnancy	3 cases.
Diabetic retinitis	6 cases.
Specific retinitis	2 cases.
Retinitis pigmentosa	5 cases.
Neuro-retinitis	4 cases.
Chorio-retinitis	3 cases.
Embolism of central artery	2 cases.
Unclassified	3 cases.
	71 cases.

Under hemorrhagic retinitis are grouped those cases of retinal apoplexy which, when first seen, did not necessarily present evidence of an active inflammatory process, but in my experience the diminution of vision has been quite as great in one as in the other. They were associated with arteriosclerosis, cardiac disease, leucocythemia, anemia and gout and in all the treatment was directed to the existing general condition with the exhibition of atropin, mercuric bichlorid or potassium iodid and the avoidance of irritation by light or use of the eyes. There were 4 cases of complete recovery without scotomata and three cases of improvement; four remained absolutely unchanged. Of the 30 cases of albuminuric retinitis the subsequent history of 20 is known. Death occurred in all but one, and of these,

10 lived less than 3 months.
6 lived less than 6 months.
1 lived less than 12 months.
2 lived more than 2 years.
1 is living after 5 years.

In 16 of these cases the existence of a nephritis was not recognized or suspected till the ophthalmoscopic findings called attention to the condition, and in all the treatment was relegated to the family physician. This probable length of life is entirely corroborated by a study of a much larger number of cases which I have previously reported. Seventy per cent. of these patients die within a few months. In the retinitis of pregnancy there was recovery in two, no improvement in one. In one case of retinitis, possibly specific, there was complete recovery, but with these exceptions there was no improvement in the condition or visual acuity in any of the cases I have seen. The apparent improvement of vision seen in some cases is, in my experience, apt to be due to faulty and inaccurate mensuration; reports by different observers of the visual acuity are not credible. The following case is unique in my experience:

CASE 3.—E. G., aged 38, American, bank clerk, was first seen Jan. 23, 1903, when the vision was R. V. = 0.1 — 1.0 (—) 0.25 C. 180° = 1.0; L. V. = 0.1 — 1.25 = 1.0. Patient had specific disease of two years' duration and was under active treatment at the time. Two weeks previously a dentist, in killing a nerve, had broken a broach in the canal of the right upper canine tooth and had been obliged to extract the tooth after a fortnight owing to pain and inflammation. During the interval there had been a blurring of his vision in the right eye, which, however, lasted but a few hours, and at the first examination the vision with a correction for myopia was normal. Four days later there was an active serous retinitis with numerous hemorrhagic splashes over the entire upper half of the retina and the vision was reduced to the ability to count fingers at a few feet. More active specific medication was instituted, but the edema of the retina increased till there was an exudate springing from the retina at the macular region which extended into the vitreous and was freely movable, waving back and forth with each motion of the globe. February 17 the patient was seen by Dr. Hasket Derby of Boston, who gave as his opinion that it was either a metastatic condition from the trouble in the jaw or a reflex disturbance, he did not believe that it was specific in its origin. Mercurials and the iodids were continued, but without any effect and in June, 1903, the vision was but slightly improved, and there were numerous white atrophic patches where the hemorrhages had occurred and a slaty colored exudate nearly covering the site of the inflammation. There was no external evidence of inflammation, and the patient was allowed to return to work. Feb. 4, 1904, the vision was 2/50 and the same ophthalmoscopic picture presented. He was not seen again till April 21, 1906, when to my surprise I found that the vision had improved with — 1.25 to normal. The retina still presented the gray appearance, and there was visible the distinct white line of an obliterated artery, a branch of the superior temporal. The exudate into the vitreous was entirely absorbed. The vision has remained normal.

I have seen one other case where the placing of a crown on a canine tooth was followed by a hemorrhagic retinitis. In the absence of any other probable cause, the crown was removed and the root extracted. In the nerve canal was found a bit of steel one-eighth of an inch in length and a pus cavity was evacuated by the extraction. The hemorrhagic condition in the retina subsided in a month, with, however, no improvement in vision. These two cases tend to show a causal relation between the teeth and the retinal circulation which is not usually recognized in the text-books.

There were 13 cases of detachment of the retina and 9 were of recent origin. In the treatment I utilized, 1, rest in the recumbent position and pressure bandages; 2, pilocarpin as a collyrium and by subcutaneous injection; 3, scleral puncture; 4, subconjunctival injections of physiologic saline solution, and, 5, intraocular injection. In but one case was there a return of the retina to its normal position which was permanent and that was when a Graefe's knife had been passed through the sclera and retina at its most dependent portion. The resulting exudate has held the retina in position for more than twelve years.

EMBOLISM OF THE CENTRAL ARTERY.

In one case of embolism of the central artery, vision was restored.

CASE 4.—H. W., aged 55, American, one morning while dressing he placed his foot in a chair to lace the shoe and at that instant lost the sight of the right eye. I saw him a half hour later with the typical appearance of embolism and with the first temporal branch of the ascending artery collapsed and empty. Vision was *nil*. He was immediately placed in bed and an injection of pilocarpin given, repeated in twelve hours with a most profuse ptyalism and diaphoresis. Deep massage was instituted and kept up at intervals of a few hours. On the second day the ophthalmoscopic picture was the same, but while examining the fundus I saw the vessel fill with blood and a pink flush extend like a wave over the whitened area. There was immediate improvement in vision which some weeks later was nearly normal, a slight scotoma being the only trace of the accident. I ascribe the recovery of vision in this case to the fact that active treatment was instituted wihin a few hours after the accident.

With the exception of this case and possibly the specific retinitis reported above, I have not found any drug or any procedure which has materially influenced the condition. When the patient gets well he does so in spite of the treatment and not because of it, and the therapeutics of retinal disease is resolved into attention to the general condition—rest under atropin and avoidance of all irritation. As a rule, the patient does just as well if you tell him what is the matter and allow him to go his way as when active medication is instituted.

CONCLUSION.

In this series of 5,000 cases there have occurred many of great interest to me and from which I have learned useful lessons, yet I am not warranted in inflicting them on you, and I beg you will believe that what I have stated is not all that I have learned by experience. Indeed as the years go by I find that I rely more and more on the knowledge thus acquired in treating the commoner and often quite as troublesome diseases and depend on the current literature for the rarer conditions, even though to do so tends to keep a man in a narrower rut.

We can not all be teachers or pose as authorities, and I have little patience with the desire of many to acquire priority in the report of a case or the design of an instrument. Many of us are content to do, as best we may, the work which comes to us, availing ourselves of every proffered aid and seeking to increase the efficiency of our armamentarium and to eliminate the possibility of recurring mistakes. It is to these that I venture to plead for a more careful consideration of the commoner diseases that we are called on to treat rather than the devotion of time and energy to such cases as occur but once or twice in a lifetime. The field is wide and the last word has not been said in any of the topics I have mentioned.

[For the discussion, see the department of Section Discussions in this issue.]

OBSERVATIONS ON PEMPHIGUS.*

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American dermatology has just cause for satisfaction in contemplating the present status of the pemphigus question, at least from a morphologic point of view. It is no longer necessary to mention dermatitis herpetiformis with an air of apology. Not only the French, under the leadership of Brocq, recognize in what they often term Duhring's disease, a clean-cut clinical entity; the English, German, Italian and practically all European dermatologists use that diagnosis continually; and even the Vienna school, obstinate until recently, has of late receded from its position to some extent. The keynote of this whole question is not one of nomenclature nor of classification. Too much printer's ink, I fear, has been wasted in this respect in the past twenty years. The advantage of narrowing down the conception of pemphigus to proper limits and using the term only in reference to more or less serious bullous affections with well-known clinical features and decursus, and separating from it that benign, pruriginous, chronic, relapsing, polymorphous dermatitis in which bullæ appear occasionally, but not necessarily always, lies largely in the fact that the way has now been paved for practical etiologic investigations and for therapeutic advances by international cooperation. As long as one observer has as an object for his histologic, bacteriologic and hematologic studies a true case of malignant pemphigus, while another has been working on a benign case of dermatitis herpetiformis, contradictions and misunderstanding and general confusion must arise. A study of the literature of the past twenty years shows this in many instances; and one can not overcome a peculiar feeling of disappointment in comparing the enormous mass of papers and monographs devoted to pemphigus with its meager practical results. To illustrate, I might mention the reports of the Vienna Dermatologic Society, in which during the past twelve or fifteen years more than a hundred cases of so-called pemphigus have been demonstrated and discussed. Not a single word about etiology, not the feeblest therapeutic suggestion. Nothing but morphology, quibbling about diagnosis, continuous attacks against Duhring's views. And in this connection a doubt may be fairly expressed whether the imposing array of four hundred or more personally observed cases of pemphigus of which Kaposi could boast could pass muster under modern critical review. Or take Neumann's pemphigus vegetans, which most of us have long ago accepted as a distinct variety of pemphigus. Unna devotes his mighty pen to a fight for his new name, erythema bullosum vegetans. Then comes Tommasoli, who would rather call it condylomatosis pemphigoides maligna. And then still comes Hallopeau with his pyodermite vegetante. *Cui bono?*

A great deal of earnest labor has been devoted to the histology of the pemphigus bulla in recent times. Among the noteworthy workers in this line may be mentioned Luithlen, Kromayer, Jarisch, Kreibich, Grouven, Leredde and others. But there is far from unanimity in their findings as to the seat of the bullæ. The old view of Auspitz, who saw in a sudden disintegration of the prickle cell layer the chief pathologic process, and therefore called it an acantholysis, finds few subscribers now. According to the investigators mentioned above, the formation of the bulla varies in different cases, so that at times the most superficial strata only of the epidermis are elevated; in others the bleb is formed by the separation of the whole epidermis from the chorium, and in others again it forms within the rete layers. No real light is thrown by these researches on the essential nature of the disease. This applies also to the otherwise interesting experiments of Weidenfeld, who succeeded in artificially producing large blebs on dead infantile skin under hydrostatic pressure.

The hope that modern bacteriologic methods might show in the contents of the bullæ some pathogenic organism has, as yet, not been fulfilled. Peculiar diplococci have repeatedly been demonstrated by Demme, Claessen, Bullock, Welch, Daehnhardt and many others in cases of acute infectious pemphigus, but not in true chronic pemphigus. What other organisms have occasionally been cultivated from the bullous fluid in typical cases of pemphigus are far from characteristic or pathognomonic. Nor has chemical analysis given definite results, and it would be useless to reiterate here the various findings in this respect. Some authors (Luithlen and Kromayer) have claimed a special dissolving or disintegrating effect of the bullous fluid on the surrounding epidermis in explanation of the peculiar phenomenon in pemphigus foliaceus, but this has been denied again by Jarisch and others.

In regard to the etiology, we find that the neurotic theory is still favored by many authors, though postmortem examinations have only very occasionally shown any morbid condition in either brain, spinal cord or peripheral nerves. Du Mesnil de Rochemont, in an able paper, after reviewing the various theories, describes five cases fully to prove their neurotic origin. Functional neuroses, hysteria, prick with a thorn are given as the causes. Such isolated cases as Kirchner's observation

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

of pemphigus following the suppression of perspiration, or Guth's after exposure to intense solar heat, throw little light on the etiology of pemphigus in general. The same may be said about the theory of the osteomyelogenic origin of the disease, as is apparently demonstrated in the case of Pelagetti, who found great numbers of large mononuclear leucocytes in the bone marrow.

Metabolic disturbances have been claimed since olden times, but the most careful urinary examinations have only occasionally shown an abnormal composition. Rather unique is Boeri's observation of peptonuria which accompanied the various bullous outbreaks in his case, disappearing in the intervals. Leredde urges the hematogenic origin of pemphigus, claiming that peculiar toxins are formed in the spinal cord and from there disseminated into the blood. Examination of the blood itself, however, while occasionally showing an increase in cosinophile cells, has as yet not helped the elucidation of that obscure problem. Grouven makes the startling proposition to consider as true pemphigus only such cases whose etiology is entirely unknown. Very suggestive is the explanation of Tommasoli and Sormani, who attribute chronic pemphigus to the effect of leucomains and the acute forms to microbic influences. This leads me to the consideration of an etiologic factor which seems to me to have a more than casual meaning, and for which I shall offer some observations of my own. I refer to the influence of organic animal poisons. Literature gives us a number of instances of this sort. In studying a case of acute pemphigus, Pernet has collated 16 cases of that variety, 8 of which occurred in butchers, while a few of the other patients had been handling animal products of some kind. Lassar has observed a case of pemphigus after poisoning by game. Herxheimer, in a study of pemphigus vegetans, cites 3 cases, one of whom was a fishermaster, another a cattle dealer, in whom the diagnosis first made was foot and mouth disease (mundseuche). Morley and Ransome report a case of bullous eruption in a butcher. Fabry's case occurred in a milk dealer. Sandby reports a case of acute pemphigus in a butcher, following a cut. Baerman reports from Neisser's clinic a case of general bullous eruption in a butcher. There were repeated attacks. The bullous fluid was sometimes auto-inoculable, and the author considers his case as a chronic streptococcus infection.

Of special interest is Bowen's report of a case of acute infectious pemphigus in a butcher occurring during an epizootic of foot and mouth disease. He discusses fully the possibility of the identity of the two diseases, and furthermore parallels his case with the bullous eruptions following vaccination, of which Boston has had an epidemic at the same time when such an epizootic existed.

To these observations, which are probably only a small portion of all the reported cases, I can add two of my own; one a true chronic pemphigus, the other a pemphigoid bullous eruption.

CASE 1.—Dec. 3, 1903, I was asked by Dr. McGaughey, of Chicago, to see, in consultation, a patient whom he had treated for some time. On entering the patient's flat, I was struck by that odor peculiar to butcher shops, and soon learned that the husband was engaged in that trade. Mrs. S., a rather frail, tall woman of about 38 years of age, had suffered from bullous eruptions for several years. I found large, well-developed, tense bullæ with clear contents on an otherwise pale skin, situated mostly on hands and feet, but disseminated also on arms and legs and a few on the face and the trunk. The diagnosis offered no difficulties. The treatment consisted in the internal administration of arsenic, gentle opening of the bullæ, local antiseptic and astringent baths and washes. The patient remained under my observation for several years, and was shown to the Chicago Dermatological Society, particularly on account of a rather uncommon epiphenomenon, which, however, has been described by the elder Hebra and since by several authors as a somewhat characteristic sequence after the healing of the pemphigus blebs. I refer to the formation of multiple, milium-like, epithelial horn cysts, which in my case showed abundantly on the legs, hands and arms.

According to recent information, the patient is now fairly comfortable, but suffers from occasional outbreaks. The case may be considered as a rather benign form. The etiologic connection with the husband's occupation seems to be at least plausible.

CASE 2.—March 9, 1907, I was visited at my office by Mr. M., aged 27, occupation a butcher for ten years. He stated that for six years he had had each spring, with almost periodical regularity, acute eruptions of bullæ on his hands and feet, which usually lasted for about a month, and had caused him considerable suffering and inconvenience. He had never transmitted his trouble to any other member of his family. His general health had always been good, except that within a few weeks he had had his appendix removed. The present attack had come on within a few days.

I found his hands and feet literally covered with large, tense bullæ, just barely reaching over the wrists and ankles, respectively. The rest of the body was not affected. There was no fever present nor any other systemic complication. My diagnosis was erythema bullosum pemphigoides. Under simple treatment the patient recovered within a few days, and at my suggestion decided to abandon his occupation as a butcher.

I have no explanation to offer for the periodicity of the attacks in this case. Their causal connection with the handling of raw meat seems to me very highly probable.

I am citing this case without any desire to force it under the head of pemphigus, but merely to present another instance of the production of large bullous lesions anatomically and clinically identical with those of true pemphigus due—at least very probably due—to exposure to animal poisons of some kind.

Far from trying to give to my observations or those mentioned before any more weight than they may deserve, I believe we have here a large group of cases of bullous eruptive disorders, some of them of the acute, infectious, malignant type, others of a more benign acute form, yet others of the typical chronic form, all belonging together through a common etiologic factor. And one need not indulge in fanciful speculation to appreciate that probably many other cases, not necessarily in butchers, milk dealers and the like, do originate from meat poisoning or some kind of animal toxins.

In preparing this paper I have carefully looked through my records for the past ten years, and found therein notes of 14 cases of pemphigus. I believe it would be of little value to encumber this brief report by a statistical or detailed clinical account of all those cases. Some of them proved mild and tractable; in others all my efforts to stem the fatal progress of the disease were in vain. One case, however, I may be permitted to briefly report on account of the peculiarity in its development and the rather favorable outcome after the presence of the features of true foliaceus pemphigus for some time.

CASE 3.—Mrs. I. N., 43 years old, of Evanston, Ill., visited me June 5, 1903, at my office, on account of a generalized eruption on the body, which I diagnosed as herpes tonsurans maculosus, as known to the Vienna school, and differing, in my opinion, from pityriasis rosea, with which, I believe, I am fairly familiar, though many writers consider the two to be identical. In other words, I had before me a parasitary eruption, due to the trichophyton fungus, which, from the statements of the patient, was probably acquired by infection from

her own dog. Under energetic antiparasitary treatment the lesions disappeared within about ten or twelve days, but there gradually developed, at first, isolated and by and by more widely disseminated, large, bullous lesions. Such a development of pemphigus from an antecedent generalized eruption of some other clinical type has occasionally been recorded by other writers.

Without going into unnecessary details, I may state that within the next six weeks almost the whole surface of the body became involved, including the face and hairy scalp. Imperceptibly the type of the whole clinical picture had changed from that of pemphigus vulgaris to the clinical form of pemphigus foliaceus. There was little tendency toward the restoration of the epidermis. Instead, large areas of the surface were covered with crumbling, heaped-up masses of dry epidermis, desiccated serum and detritus. The chest and back particularly showed the familiar picture of superficial transversal rhagades between streaks of exfoliated epidermis. To give a full account of the aspect presented, I might simply copy the description of that terrible disease from any good treatise. There were occasional spells of apparent improvement followed by set backs, and at all times one could observe that peculiar phenomenon described by Nikolsky, namely, the easy detachment of the seemingly sound-looking epidermis on the slightest friction of the skin. Beyond a slight conjunctivitis and some irritation of the nostrils, the mucous membranes remained intact, which seemed to me an encouraging feature. There was usually some elevation of temperature, disturbed sleep and, as a matter of course, considerable general discomfort. But no vital organ seemed to suffer. After the persistence of the severe symptoms for a period of one and one-half years there gradually commenced a slight improvement, the skin in some places remained firm, the face cleared up, and fewer and fewer superficial bullæ were formed. About three and a half years after the onset of the disease, during the past winter, the patient was able to visit me for the first time at my office. I have recently learned from the patient's sister that she is very comfortable, going to theaters and enjoying life, and evidently not much in need of further services by me.

My treatment of the case was, of course, varied. Internally I commenced with arsenic in small and frequently repeated and gradually increasing and then again decreasing doses. This was kept up for many months. Several such courses were carried out. Quinin was given at some times systematically, but did not seem to do so well. General tonics containing iron and strychnia, also cod liver oil with phosphorus, were given for long periods. The diet was arranged on most liberal grounds. Nothing which the patient really cared for was ever forbidden; even wine was allowed, and, in fact, the patient insisted on rather liberal quantities of claret and rum to insure sleep. Locally, protracted baths were given for a long time until the patient seemed to tire of them. Soothing lotions and mild salves were given in many varieties, according to the indications furnished by the condition of the skin. Of local applications the greatest benefit seemed to be derived from painting at first small territories and then the whole affected surface with a 10 per cent. solution of ichthyol.

How long the present favorable condition in this case may last remains to be seen. But in view of the sad, practically fatal prognosis of all these cases, I am glad to be able to report this somewhat unusual good result.

[For the discussion, see the department of Section Discussions in this issue.]

Diagnosis of Abscess in Liver.—Axisa writes from Alexandria to the *Centbl. f. innere Med.* No. 13, 1907, to call attention to the constant increase of ammonia in the urine in case of an abscess in the liver. It may increase to form from 9 to 24 per cent. of the total nitrogen in the urine, with simultaneous reduction of the proportion of urea and alimentary levulosuria. He thinks that the constant finding of this combination justifies exploratory laparotomy in dubious cases.

THE SALICYLATES IN THE TREATMENT OF LICHEN PLANUS.

SOME UNUSUAL FORMS OF THIS AFFECTION.*

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Perhaps the most generally useful internal remedy in the treatment of lichen planus is arsenic, which, when associated with appropriate local applications, in most cases produces improvement within a reasonable time and eventually a cure. In a not inconsiderable minority, however, arsenic fails to exert a favorable influence on the disease, or may even aggravate it and materially increase the patient's discomfort. In these cases I have recently employed with more or less success the various salicylates, which, so far as I know, have not yet found a place in the text-books as approved remedies in this disease, although a closely related drug—salicin—has been recommended by Crocker. Although the number of cases in which I have used them is yet small, the relief afforded in some instances was so immediate and decided that I have thought it worth while to call attention to these remedies with the hope that they may receive a more extended trial.

Case 1.—*Patient.*—Mr. S., aged 46, a hard-worked clerk in a large manufacturing establishment, came under observation early in October of last year, with a most extensive lichen planus.

History.—The eruption which was of one month's duration, was at first limited to the abdomen and forearms, but rapidly spread until it involved every region but the face and was attended by severe itching.

Treatment.—At first arsenic was given in moderate doses, but the eruption continued to spread, and the itching was not at all relieved. After two weeks of ineffective treatment with arsenic he was given salicylate of soda, which was followed by immediate relief of the severe pruritus and a check in the spread of the eruption. At the end of another two weeks it was noted that new lesions had ceased to appear and that there was no longer any itching. After another week or two of the salicylate treatment it was stopped and the arsenic was again taken up; but the return to the arsenic was soon followed by a return of the itching and the appearance of new lesions. The resumption of the salicylates, sometimes salol, sometimes lithium salicylate or sodium salicylate, was followed by speedy improvement, which continued to complete recovery.

Case 2.—*History.*—Mrs. L., aged 43, had a lichen of three or four months' duration, which, although moderate in extent, being limited to the wrists and legs, was intensely itchy, giving the patient rest neither night nor day, so that she was in an extremely nervous and overwrought condition. The skin, too, was unusually sensitive, every local application seeming to increase the irritation.

Treatment.—Arsenic was given, in one form or another, for a period of six weeks and various washes were applied for the relief of the itching, but without any real improvement. About this time the patient began to complain of rheumatic pains in the knees, for which she was given fifteen-grain doses of salol four times a day, and immediately the lichen began to improve, having almost disappeared at the end of two weeks of this treatment. The salol was now stopped and the arsenic tried again; this change in the treatment was followed immediately by an increase in the itching, which again became well nigh intolerable. Sodium salicylate was now substituted for the arsenic, with immediate relief, and this drug was continued until the complete disappearance of the disease. The relief of the itching in this case was most striking.

Case 3.—*History.*—Mrs. S., aged 55, was referred to me by her family physician for the treatment of a lichen planus on

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

the buttocks and the inner and posterior surfaces of the thighs. The disease had already lasted eighteen months, and the treatment which she had had, which included, among other things, the Roentgen ray, gave her little or no relief.

Treatment.—For a time she was given arsenic, but this had to be used cautiously, since she bore it badly, experiencing gastric distress even from small doses. She improved, however, slowly but steadily under this treatment combined with the application of an ointment of phenol and mercuric chlorid. After a time she began to complain of pain in the larger joints, and the arsenic was stopped, salol being given instead. The improvement in the lichen was quite as decided while taking this drug as under the arsenical treatment, but not more so. Under the alternate use of the salicylates and arsenic this patient made a complete recovery, but the beneficial effects of the salicylates were less striking than in the cases already related.

CASE 4.—*History.*—A man was recently under observation in the University Hospital, in whom the eruption was unusually extensive, being almost universal and accompanied by almost intolerable itching.

Treatment.—Salicylate of soda was given in 15-grain doses four times a day. Under this treatment there was prompt improvement in the eruption, the papules flattening down and growing paler, and the itching, too, was considerably diminished, although it still continued an annoying symptom. As the pruritus still continued after a week's use of the sodium salicylate, the patient was given arsenic, under which the improvement, at least so far as the itching was concerned, was more decided. In this case the salicylate seemed to be distinctly less useful than the arsenic, although not without favorable effect.

It goes without saying that an experience based on so small a number of cases is inconclusive, but it would seem that the salicylates are of distinct service in a certain proportion of cases of lichen planus, especially in the relief of itching, which is sometimes a most distressing and stubborn symptom; and it would further appear that they are likely to be of most use when arsenic has failed, or, as occasionally happens, has actually increased the patient's discomfort. Their real value, however, can only be determined satisfactorily by employing them in a large number of cases.

SOME UNUSUAL FORMS OF LICHEN PLANUS.

Lichen planus may be regarded as the type of a papular disease, the eruption being, as a rule, remarkably uniform in appearance and distributed on various parts of the body without any special arrangement. In exceptional cases, however, there may be a more or less marked departure from the usual type, both in the character of the lesions and, more especially, in their arrangement. Instead of the ordinary diffuse eruption there may be an arrangement in circles and segments of circles with no appearance of discrete papules. In a case observed some years ago the eruption consisted entirely of a few scattered, brownish-red, slightly scaly rings and crescents situated on the legs, the whole looking much like a syphilide. This patient had been under my care seven years before for an extensive lichen of the ordinary diffuse type.

Instead of rings the eruption may appear as slightly elevated discs with or without depressed centers, as in the case of a woman observed in the skin dispensary of the University Hospital some years ago. In this patient there were a number of violaceous, slightly scaly discs situated on the flexor surface of the forearms, while on the backs of the hands, the extensor surface of the forearms and tops of the feet the eruption presented the usual appearance.

In rare instances the disease exhibits a band or ribbon-like distribution, sometimes following more or less closely the course of some nerve tract; I have seen two striking examples of this form. The first was in the person of a negro man, 56 years old, in whom a broad band of closely aggregated lichen papules began on the left buttock and extended down the posterior surface of the thigh and outer side of the leg to the ankle, following with considerable accuracy the course of the sciatic nerve.

In the second case, the patient being a woman 43 years old, there was a broad, serpentine, verrucose band which, beginning on the inner surface of the right thigh just above the knee, extended over the anterior surface of the leg to the ankle. In this patient there was also an abundance of lichen papules on the flexor surface of the forearms, but in this locality the disease presented no unusual appearance.

Perhaps one of the most interesting, and at the same time one of the rarest of the aberrant forms of lichen planus, is that in which, along with the usual flat-topped, angular papules characteristic of the disease, there are a greater or less number of variously sized blebs. Only a small number of cases of this kind have been reported, the most remarkable being one observed by Kaposi, in which the number and size of the blebs was so great as to obscure for a time the lichen eruption. In the first case reported in that portion of this paper dealing with the use of the salicylates, this complication was present in a moderate degree. As has already been stated, the patient was an overworked clerk, with a most extensive and intensely pruritic eruption; from the very beginning, according to the statement of the patient, small blebs were observed from time to time scattered about on various parts of the trunk and lower extremities. They were about the size of a split pea, never very numerous at any one time, without any special distribution or arrangement, and ruptured spontaneously soon after they made their appearance.

In endeavoring to explain this departure from the ordinary type of the disease, it has been maintained by some that the blebs were no essential part of the eruption, but were due to arsenic, which is so generally employed in its treatment, a drug which, as is well known in exceptional cases, produces cutaneous lesions of various kinds. In the foregoing case, however, this etiologic factor could be excluded at once, since this drug had not been employed during the first month of the disease, while the blebs were present from the very beginning; and other observers have recorded similar cases. In an analysis of the literature of bullous lichen planus, Whitfield collected the reports of 17 cases in which bullæ were present, and in nine of these he found that no arsenic had been taken. It is possible that, in some cases at least, the blebs are the result of traumatism inflicted on the skin by the patient in scratching.

[FOR THE DISCUSSION, SEE THE DEPARTMENT OF SECTION DISCUSSIONS IN THIS ISSUE.]

Diseases of the Nasopharynx in Infancy.—J. L. Morse, in the *Providence Medical Journal*, states that although the symptoms of retropharyngeal abscess are usually so characteristic they are very frequently misinterpreted. If the obstruction is high up, they are most often mistaken for those of a simple pharyngitis or rhinitis, although diphtheritic paralysis is sometimes suspected. If the obstruction is low down, they are often ascribed to laryngitis, either catarrhal or diphtheritic. In cases in which the signs of bronchitis are marked the primary condition of the throat is often entirely overlooked and a diagnosis of bronchitis or bronchopneumonia is made.

A CASE OF BENIGN MELANOSIS.*

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MINNEAPOLIS.

Melanin occurs normally in man and the animals in the chorioid, hair and skin, also in some animals in specialized organs, as the ink bags of the cuttle fish. It occurs as the coloring matter of pigmented sarcoma in man and animals, and also in the latter as the result of certain parasites.

Its origin seems still in doubt, but most authorities agree that it is not a direct derivative from blood pigment, but the product formed by the metabolic activity of specialized cells. It is composed of nitrogen, hydrogen and carbon in the proportions of nitrogen one part to five of each of the others, with sulphur varying up to 10 per cent. and iron present sometimes in small amounts.

Melanuria is clinically of two distinct types: First, one in which the urine is black or very dark colored when passed and contains melanin by chemical tests; second, one in which the urine is not abnormal in color when passed, but on standing and oxidization becomes black or dark colored. Melanotic urine occurs under several well-known conditions: First, in cases of general melanosis arising from the dissemination of melanosarcoma; second, in cases of alkaptonuria, in which aromatic substances are excreted with the urine which by oxidization cause a dark color after standing; third, in ochronosis, in which with melanotic staining of certain cartilages there is sometimes associated melanotic urine.

Melanotic milk and sweat are only, I believe, reported in cases of general melanosis from sarcoma, and such pigmentation of these discharges argues for very extensive dissemination.

In animals certain cases of general melanosis have been described, not due to sarcoma, but thought to be due to parasites, but no such cases have been recorded in the human being. Consequently a case of melanosis combining melanotic abdominal tumors with pigmentation of urine, milk and sweat must prove of especial interest when its benignancy is established by the survival and good health of the patient after fifteen years. Such a case I am fortunate enough to be able to report, and, after having a careful research made through medical literature with entirely negative results, it would seem to be unique. The case is reported through the courtesy of Drs. Beard and Abbott, whose patient the woman was.

History.—M. B., female, aged 49, of a nervous type, regular in menstruation, gave a history of repeated attacks in girlhood of pelvic pain, also extreme chronic constipation, hemorrhoids and occasional hemorrhoidal hemorrhages. She was married in 1886. In 1888 she consulted Dr. Beard because of non-conception. At that time a bimanual examination revealed a globular, smooth, cystic tumor in the right pelvis about the size of a medium orange, somewhat sensitive to pressure; the uterine cervix was crowded toward the left. She then consulted Drs. Abbott and A. J. Stone. The former advised operation; the latter galvanism to the tumor. A course of the latter treatment was adopted for three months between menstrual periods. The tumor decreased in size. After the third month of treatment conception occurred in May or June, 1889. Pregnancy was uneventful and parturition was normal. She was delivered of a healthy baby in February, 1890. Examination two weeks later showed shrinkage of cyst with induration of tissue around it.

Later History.—In 1892 the patient consulted Dr. Beard for a sense of pain, burning and pressure in the right pelvis. Examination showed that the tumor had reassumed its globular form and had increased in size to that of a large orange; it was extremely tender to pressure and sagged downward. Drs. Abbott and Stone were called in consultation and operation was advised by both.

Operation.—Dr. Abbott operated April 1, 1892. An abdominal section discovered extensive adhesions whose separation revealed over all peritoneal surfaces, both free and adherent, innumerable and perfectly black tumor masses, varying in size from a small pea to a split almond. Further separation of adhesions showed primary growth to be a parovarian cyst, of size reported, smooth surface and intensely black color. The surgeons decided not to proceed with operation, giving probable diagnosis of multiple melanotic sarcoma. Two or three small growths were removed for microscopic examination.

Postoperative.—Recovery from operation was uneventful, except that on the third day the breasts swelled and became tender, and on the fourth day discharged spontaneously and by expression large quantities of ink-black fluid; this discharge continued for several days. The urine became melanotic in color, and treatment with concentrated hydrochloric acid threw down a dark granular pigment. Hemorrhoidal discharges of extremely dark blood, loaded with pigmented cells occurred for several days. Recovery was progressive.

Pathologic Report.—Two black, rounded tumors were handed me for diagnosis. These were about three-sixteenths of an inch in diameter and covered for three-fourths of their surface by glossy peritoneum. On section, the eye noted that each consisted of a dense fibrous walled cyst, containing a solid dark brown, uniformly stained material. Microscopic sections showed a fibrous cyst wall covered in part by normal peritoneum, containing an amorphous brown material which showed no cells and took no differential stains. Except for color and absence of staining reaction, it looked like an area of coagulation necrosis, in that there were hints of cellular structure in a few areas, but no stainable cells. The pigmentation was diffuse and not in decided granules, as in melanosarcoma, and there was no hesitation in negating the clinical diagnosis of melanosarcoma. I also examined the pigmented milk, and found a curious condition. The milk appeared normal as to elements, but both cells and fluid were stained a dark brown. There was absolutely no granular pigment present in any of the cells studied.

The urine at this time was black when it was passed, but contained very little sediment. As noted in the history above, concentrated hydrochloric acid threw down a heavy black precipitate in the absence of albumin and sugar. I did not see the pigmented rectal discharges, but the cells containing pigment granules were undoubtedly leucocytes.

Subsequent History.—In 1893 the patient consulted Dr. Beard as to the advisability of risking a second pregnancy. Her general health was much improved, and the previous prohibition of pregnancy was removed. The patient did not conceive. Early in 1894, galvanism was used to the primary growth with diminution of size and replacement of the again displaced uterus. Treatment was continued two months. At the third month conception occurred. Pregnancy was again uneventful; parturition was easy in January, 1895. On the third day black fluid reappeared in the breasts, gradually losing pigmentation and being replaced by entirely normal milk. Urine coincidently became melanotic and pigmented hemorrhoidal discharges of blood reappeared. Since 1895 the patient has continuously improved in health and gained in weight; constipation has improved; hemorrhoidal discharges occurred occasionally until lately. Menses were regular until the last six months, when irregularity has suggested coming of the climacteric.

Examination, March 20, 1907: This showed a globular tumor of the size of a small orange still present in the right broad ligament. It lies higher than formerly. There is very little tenderness save at one point of maximum dependence. Nervous symptoms are much ameliorated; nutrition is good. The abdominal walls are somewhat fatty; there is no intra-abdominal distension or tenderness. No other abnormal condition is

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

present. It is nineteen years since discovery of the tumor and fifteen years since attempted operation. Urine at this time is normal; no alkaptonuria. Blood is normal in every way.

The only probable explanation of the clinical and pathologic findings in this remarkable case would seem to be that the original cyst was either a dermoid with great overproduction of dermal pigment, or that a parovarian cyst, contrary to the ordinary experience, became the seat of repeated hemorrhages and so filled with changed blood pigment. Against this latter explanation stands the fact that the pigment in the urine was apparently melanin and not changed blood pigment. Later it must be supposed that the cyst, possibly as the result of galvanic treatment, ruptured and its contents being spread about over the peritoneum, implantation took place, with later encapsulation of such implanted masses by inflammatory adhesions forming the small peritoneal cysts discovered at the laparotomy. The subsequent pigmentation of milk, sweat and urine may be explained by the traumatic effect, or possibly changed pressure relations, following the abdominal section and the labor respectively. That the case is not one of delayed fatality in melanosarcoma, cases of which have been reported as existing for at least ten years before the fatal outcome, is proved by the structure of the examined tumors and the pigmented milk.

It is to be regretted that more complete chemical examination was not made of the urine and milk, but enough seems to have been done to show in the urine at least that the coloring matter was melanin.

This case is recorded simply as a remarkable simulation of the clinical features of melanosarcoma without malignancy.

PERSONAL SURGICAL ERRORS.*

ARCHIBALD MAC LAREN, M.D.
ST. PAUL, MINN.

We learn more from one mistake than we do from a long series of successful operations. We do not like to tell our errors, we would much prefer to forget them, but if we cover them up younger or less experienced men, who perhaps look to us for instruction, may be led into making the same mistake, or by minimizing the dangers of some operative procedure may unintentionally delude their patients into believing that a certain operation is less dangerous than they otherwise would.

The laity, and perhaps even some medical men, who have not had considerable experience in abdominal surgery, can hardly realize the ever present danger of leaving foreign bodies in the peritoneal cavity. I believe, considering the number of laparotomies now performed all over the world, that this accident is to-day much less frequent than it was twenty years ago, for nearly every text-book on abdominal surgery now mentions the danger of the accident and gives rules for preventing the leaving of foreign bodies in the abdominal cavity. But if one is under the impression that such accidents are now a thing of the past, let him inquire of the hospital internes of to-day, and he will probably find, as I have done, that most of them know of unreported cases.

The journals have all had articles by well-known men giving advice in this matter. Probably the best-known of these and the widest quoted abroad is by Nengebauer of Warsaw, who, when called as a witness for his friends, Kosinsi and Solman, of Warsaw, when they were sued for leaving a foreign body in the peritoneal cavity, and when judgment was rendered against them, collected and reported 107 cases in 1899 and again in January, 1904, added 87 further cases.

August Schacheimer[1] of Louisville collected 155 cases, most if not all reported in either the first or second of Nengebauer's list. Nengebauer found forceps more deadly than gauze, almost one-half of the patients dying either from their presence or from the operation for their removal. Lilienthal's suggestion[2] never to put any sponge entirely within the peritoneal cavity, but to leave at least one-half on the outside, is a good one, although necessitating a somewhat larger opening. Mickulicz's method of attaching a large glass bead to the tape is also useful, but I doubt whether any of these methods are as good as the present five or ten-yard gauze sponge, which is now used by every one, I suppose, for abdominal tamponade, and which it would be practically impossible to overlook. The use of long-handled hemostatic compression or artery forceps materially lessens the danger of overlooking one in the abdomen, and consequently they should always be used in preference to small hemostats. The man who always operates in a private hospital with the same assistants and nurses is more fortunate than those of us who have to do our work in semi-public institutions with the changing of internes and nurses, all of whom have to be trained to look out for gauze, instruments, etc. As Bull says, the counting of sponges and instruments fixes the attention of the surgeon in an unfortunate way on these articles and does not always accomplish the desired object.

When I was an interne in the New York Woman's Hospital I assisted at two postmortem examinations where a seasponge had been left following laparotomy by two eminent operators, both patients dying in a few days with acute septic peritonitis. Eleven years ago I wrote a paper on this subject, which was published in the *Annals of Surgery*. At that time I found seventeen reported cases, ten being of seasponges, all but one of the patients dying of septic peritonitis, one case where the sponge was nearly sterile forming a localized abscess from which the sponge was later removed and the patient recovered.

About fifteen years ago steam sterilized gauze took the place of the seasponge and the mortality of these cases was immediately very much lessened. The peritoneum, reinforced by the omentum, developed a heretofore unknown property of forcing these undesirable tenants into the intestine and so expelling them under favorable circumstances. In the paper already mentioned I reported seven cases with one death. Two of the cases were relieved several months after the operation by the passage of a strip of gauze from the rectum, in one case eight inches, in the other one foot in length. In a third case a later laparotomy demonstrated a piece of iodoform gauze fifteen inches in length in the small intestine, necessitating resection of five inches of intestine, with recovery. My own two cases, already reported, were as follows:

CASE 1.—*Ovariotomy and Ventro-suspensions:* Gauze sponge left in peritoneal cavity; expelled by the rectum ten days later; recovery. This patient was obstinately constipated after the operation; her temperature reaching 101 F. during the next ten days; on the tenth day the obstipation was relieved and the patient passed a large fecal movement streaked with blood, containing a small piece of sponging gauze about six

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Anns. Surg., 1901.
2. Med. Record, October, 1902.

inches square. As no gauze had been introduced into the rectum during or preceding the operation, it must have been accidentally left in the peritoneal cavity during the operation, and later expelled into the bowel. Later I again opened the abdomen of this patient to determine the cause of the continued pelvic pain. I found a very dense adhesion one inch in length between the back of the uterus and the ileum, not far from the ileocecal junction. This adhesion was separated without opening the intestine, as the remaining ovary was found to contain a large cyst, it was removed. Since this last operation she has entirely recovered.

CASE 2.—*Hysterectomy:* Immediate recovery; later persistent pelvic pain and irritation, with formation of tumor in right loin at end of two years; operation revealed tumor composed of artery forceps embedded in ulcerated intestine, inclosed in a wrap of omentum; intestinal suture; recovery. This patient was operated on at St. Joseph's Hospital, St. Paul, in 1893. I was assisted by Drs. Robert Wheaton and John Rogers, of St. Paul. Supravaginal amputation was performed for the removal of a multinodular fibroid uterus. The patient promptly recovered, and left the hospital in less than four weeks, but she was never quite well. She suffered some irritation of the bladder and frequently had a temperature of about 100 F. A number of bimanual palpations of the pelvis failed to reveal the cause of her suffering until early in September of 1895, when a hard mass was found high up in the right loin, lying immediately over the right kidney. Two years after the first operation I made a second laparotomy on Mrs. S. at St. Joseph's Hospital, assisted by Dr. Danner of this city. After opening the peritoneal cavity, I first reached the appendix, which felt as though it contained a stick; passing the fingers a little higher I could easily map out the foreign body and felt the handle of a pair of artery forceps which lay entirely within the intestinal canal; the head of the forceps lay in the canal of the cecum, the middle of the shank, for a half inch above and below the lock, lay within a coil of ileum, while the point lay entirely in the distal end of the appendix. And over the entire inflammatory mass lay the closely adherent omentum. The cecum was opened and the forceps removed, the adherent coils of the intestines were separated, and the intestinal openings were sutured with catgut. The appendix was amputated and the patient made an uninterrupted recovery and is now perfectly well.

In the past eleven years, or since the paper already mentioned was published, there have been two other cases as follows:

CASE 3.—*Vaginal Section for Pelvic Suppuration:* Gauze strip left in wound. This case was operated on at St. Joseph's Hospital some five years ago; one of the vaginal arteries bled considerably and strips of iodoform gauze were used to control the hemorrhage. In about one hour she commenced to bleed so profusely that Dr. Ritchie, my partner, removed the packing and repacked. During the afternoon a second hemorrhage occurred, and, as neither Dr. Ritchie or myself could be reached, the house surgeon repacked; after this she went on to perfect recovery. Two months later, and after she had gone home, on account of a very offensive vaginal discharge, she examined herself and pulled out a twelve-inch strip of iodoform gauze. On the advice of my attorney I paid her handsomely for this piece of gauze rather than stand suit, although she admitted that she was perfectly well and did not consider that I was personally at fault.

In the last 1,000 laparotomies there has been one other case.

CASE 4.—*Hysterectomy:* Tape sponge left in cavity; death on third day. This woman had a large multinodular fibroid uterus choking the pelvis and causing excessive bleeding. A supravaginal amputation of the uterus was done; the usual precautions of counting the sponges and instruments showed all returned, but at the postmortem on the fourth day after the operation a tape sponge twelve inches square, an eight-inch tape rolled into a ball, was found under the liver. No other cause of death was discovered.

Before leaving this subject I would like to report part of a conversation which I had recently with Dr. Maurice Richardson, in which he said that he had on several occasions operated on the patients of other surgeons and had removed forgotten foreign bodies, and that, to the best of his knowledge, these people never were told what had been the cause of the local inflammation or abscess which had needed further surgical care. We all know that this excellent rule is not always followed by surgeons of equal standing, as it should be whenever possible.

In the northwest we have always been very fond of using catgut for all sorts of suture and ligature material. Many years before it was as universally used in the east as it now is we were following Boeckman with his method of dry sterilization and using plain catgut even for intestinal suture in very many cases. When Dawbarn of New York first described his purse-string method of dealing with the stump of the amputated appendix I accepted it and have continued to use it ever since, at first using only a single strand of catgut. After having used this method successfully in several hundred cases I had, about four years ago, a sudden death on the third day; the postmortem showed that the purse-string had given way and that the bowel contents had escaped into the peritoneal cavity and caused the patient's death. I then commenced to use linen thread; many of these patients, however, complained so bitterly of pain in the region of the stump for several months that I later made use of two separate catgut sutures, the outer strand hardened either with formalin or chromic acid. After adopting this method there was one death in 379 consecutive operations or removals of appendix either in chronic or relapsing cases or in laparotomies for other conditions where it seemed best to remove the appendix. This woman suddenly developed, on the sixth day after her laparotomy, a right-sided paralysis. She died on the tenth day from cerebral apoplexy. Postmortem showed abdomen normal, stump of appendix perfectly healed.

Case 380 was that of a patient on whom I did a simple myomectomy for the removal of a subperitoneal fibroid the size of a baseball, and also of a small dermoid tumor of right ovary containing skin, hair and teeth, and removed a chronic appendix. The woman died on the fifth day; postmortem showed septic peritonitis from intestinal perforation at site of appendiceal stump.

Several of my surgical friends have suggested the possibility of perforation, but I have felt that the method I was using was different from any of the others and was consequently perfectly safe. I have not hesitated to teach this method as the best one that I know of. I, therefore, take this method of notifying any one who may have heard me that I was wrong, and warning them that the danger of using any form of catgut alone for intestinal suture is very considerable. It seems hardly necessary to state that since February I have changed my method of dealing with the stump of the appendix. I now use first a fine catgut purse-string and over this the same sort of suture of fine silk or linen.

350 St. Peter Street.

How Can the Physician Study the Workman at His Work?—Eisner (*Münch. med. Wochschr.*) discussed this before the Berlin Society for Social Medicine. The German laws regulating indemnities in accident insurance have rendered important for the physician all questions affecting the loss of the earning capacity from accidents while at work. Eisner says that photographs of workmen at work in different trades, with special regard to the muscles used, the positions assumed, the bad habits in this respect, and other details, would prove invaluable for physicians when called on to certify as to the impairment of the earning capacity from traumatism.

MODERN VIEWS ON THE PHYSIOLOGY AND PATHOLOGY OF ACCOMMODATION.*

PROF. CARL HESS.
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In bringing before you some modern views on accommodation I hope to be able to satisfy both those who are interested in theoretical investigations and those who prefer the discussion of more practical questions. Few problems stand in such an intimate connection both with theoretical and with practical ophthalmology, and in the last twenty years there has been much discussion on points of great importance. It is on these points that I wish to speak.

Since Thomas Young, more than a hundred years ago, first proved that accommodation must be caused by changes in the shape of the lens, and since Cramer and Helmholtz have shown us that these changes may be seen and measured by studying the Purkinje reflex images, two theories have been put forward to explain how these changes in the size of the lens might be brought about. Helmholtz believed that contraction of the ciliary muscle produces a slackening of the zonula, at least a transitory one, and that in consequence of this slackening the surfaces of the lens, especially the anterior one, become more convex. On the other hand, it has been repeatedly asserted that this increase of convexity is produced, not by slackening, but by tightening of the zonula. This theory, first put forward in 1858 and 1885 by Mannhardt and by Schön, has been supported in the last years by the careful experiments of Tscherning.

We shall see that questions which at the first glance seem to be merely practical, as, for instance, the treatment of presbyopia, of myopia, of glaucoma, etc., must be greatly influenced by the views which we hold on the mechanism of accommodation. I have, therefore, been endeavoring for a long time to invent new methods and discover facts that might enable us to come to a decision between the two hypotheses. First, I showed by experiment that when the ciliary muscle is contracted to the maximum in the normal eye the lens is displaced downward by gravity for about 0.5 mm., and whenever the eye makes the slightest movement the lens is seen to be tremulous behind the iris. It is not very difficult to see these phenomena in eyes affected with cataract. I was able to show them to some of our American colleagues who attended my clinic.

The best method of demonstration is, first, to dilate the pupil with homatropin and then to instill one or two drops of eserin. I found that if this is done the eserin acts much more quickly on the ciliary muscle than on the sphincter pupillæ, and in consequence the complete slackening of the suspensory ligament can be studied easily while the pupil is still dilated.

It is important to show that such a relaxation is to be found not only in old people with cataractous eyes, but equally in young eyes; the experiment can be made with equal success in children with lamellar cataract.

I propose this method because in cataractous eyes it is particularly easy to demonstrate the phenomena, but with a little experience it is easy to see the tremulous lens in completely healthy eyes; for this it is best to study the reflex images (Purkinje's images) of the lens. It can easily be seen that by any movement of the eye that these images are tremulous as long as the eye is accommodated, and they can be seen displaced downward by gravity.

These methods are especially suitable for demonstration. A more precise method, and one which allows an exact measurement of the amount of displacement is the entoptic: If a diaphragm with a little orifice is brought about 12 mm. before the cornea the pupil is seen entoptically as a bright circle of diffusion and in it the little normal spots and opacities of the lens. If an effort of accommodation is made there is seen, first, the pupil getting smaller and the spots remaining in place, but if the contraction of the ciliary muscle increases suddenly there is seen the little spots displaced upward and returning downward with the relaxing of accommodation. This displacement is equally directed upward if the head is bent downward on to the right or the left shoulder. But no displacement is seen if the head is bent forward so that the iris lies in a horizontal plane.

Most interesting results are to be obtained if there is instilled a larger quantity of eserin so that the ciliary muscle is contracted to the maximum. Now, no displacement can be seen of the lens by *voluntary* accommodation efforts, but if the head is bent from the right to the left shoulder the lens is seen much more displaced than formerly with voluntary accommodation. I found the amount of displacement to be, under these conditions, almost one millimeter.

What may we conclude from these experiments? They irrefutably demonstrate for the first time the accommodative slackening of the zonula. Tscherning believed these facts to be incompatible with his tightening theory; he supposed that not the whole lens was displaced downward, but only the intralental substance, the capsule of the lens being slackened by tightening of the zonula. But I was able to refute this hypothesis by the following experiments: First, there can be seen in eyes with capsular opacities that the latter are displaced downward and made tremulous by accommodation. Second, I was able to show that, even in completely normal eyes, the anterior epithelium can, by special arrangements, be seen as a fine shagreen, and this film also is displaced downward with accommodation. Further, it is anatomically impossible that the lens fibers should be displaced without their capsule.

Recently the opinion has been put forward by Grossmann and by von Pflug that in accommodation the spherical posterior part of the lens is transformed into a posterior lenticonus. These results were obtained by the freezing method; eyes treated with eserin or nicotin and others treated with atropin were frozen by liquid carbon dioxid. When I read these papers it seemed to me very unlikely that these results could be correct; one of my assistants, Dr. Fischer, repeated the experiments of von Pflug on pigeons, with liquefied air, and he found that the freezing method is not at all suitable for the purpose. From the form of the frozen lens we can not draw any conclusion as to the shape of the living one. Therefore, I am of the opinion that the freezing method is quite valueless for the elucidation of the accommodation question.

I have repeatedly heard from one of our most distinguished American colleagues that of all Tscherning's experiments the most important, and the one which seems directly to contradict my views, is the following: Tscherning has shown that in the eyes of cows tightening of the zonula produces an increase of convexity. Against this view three things are to be said. First, the lens of

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the cow is very different from human lens and the accommodative power of these animals is relatively extremely small. Second, if by tightening of the zonula in cows' eyes the lens convexity can be increased, it still would not hold good for the human eye. Third—and this is the most important point—I was able to show in the eyes of new-born children, and of monkeys in which I had carefully removed the cornea and iris, that the images of the anterior lens surface increased by tightening of the zonula and diminished by slackening. So my results in human lenses are here in direct contradiction to those of Tscherning in cows' lenses.

My experiments show irrefutably that increase of lens convexity is caused by relaxation of the zonula, and—what is still more important—that even in children's eyes the ciliary muscle can be contracted much more than is necessary for the maximum convexity of the lens, that is, for accommodation to the punctum proximum; but we shall return to this question.

First, however, you will doubtless wish to hear something about the changes in the topography of the ciliary muscle and the ciliary body during accommodation. Here also there is considerable conflict of views.

Schön and Tscherning suppose that by contraction of the ciliary muscle the ciliary body is displaced backward toward the center of the vitreous, in this way increasing the tension of the zonula. But it is not difficult to show, with simple methods, that such a supposition is erroneous. In the case of patients with iridectomy the ciliary processes will often be found behind the coloboma near the equator of the lens. Instil eserin and after 10-15 minutes the processes can be seen advancing toward the cornea and lying quite clearly before the equator of the lens close to its anterior surface. This may be seen very readily in a case of lamellar cataract with iridectomy.

The following fact is equally interesting: I have often seen little tent-like elevations in the atropined eye near the equator of the lens at its anterior surface; if sufficient magnifying power is used it can be seen that these elevations are caused by the traction of zonular fibers at the lens surface. After instillation of eserin these elevations disappear more or less completely and the equator of the lens is seen to have taken a much more regular form. So there can be seen directly traction of the zonula in the non-accommodating eye and its slackening by contraction of the muscle.

Let us now look at some of the consequences which these facts must have on our views of accommodation. It had been generally admitted, even by the upholders of the slackening theory, that this slackening was suddenly compensated by an increased convexity of the lens, and Helmholtz himself believed that lens, zonula and chorioid form a completely closed capsule, entirely filled by the vitreous, and that the pressure of the liquid caused the tension of these parts.

We see from my experiments that this part of the Helmholtz theory must be abandoned. Indeed, we find complete slackening of the zonula and tremulous lens in the perfectly healthy eye. A normal amount of accommodation is possible in eyes in which the pressure of vitreous is eliminated by a hole in the chorioid and sclerotic.

A second fact shown by our experiments is this, that intraocular pressure must always be the same in the anterior and the posterior part of the normal eye; many authors believed, and still believe to-day, that pressure increases during accommodation in the posterior part of the eye and diminishes in the anterior part. This view can no longer be held after we have found accommodative slackening of the zonula and a tremulous lens.

And now we come to a point of great importance in the question of the causes and treatment of myopia. We all agree, I think, as to the ill effect of too close and sustained use of the eyes on the progress of myopia, and that this ill effect is caused by increased intraocular pressure. But when we come to consider the causes of this increased pressure we at once meet with a great discrepancy of views. Many authorities believe that this increased pressure is caused by accommodation. It was, therefore, necessary to find out whether such an accommodative increase of pressure actually takes place. Sufficiently exact measuring of the intraocular pressure in the vitreous with the manometer is scarcely possible without severe lesions of the eye, but measurement of the pressure in the anterior chamber is relatively easy. And as we now know by my experiments that here the pressure is always equal to that in the vitreous, it is possible to study experimentally the influence of accommodation on the intraocular pressure. I have made a number of such experiments (together with Dr. Heine), and I was able to show that even the maximum accommodation by electric stimulation of the ciliary ganglion or the ciliary muscle has not the slightest effect on intraocular pressure. Our apparatus was so susceptible that it showed the changes of intraocular pressure produced by the pulsation of the blood vessels most exactly.

These experiments must be made on eyes whose accommodative power approaches that of human eyes. It was, therefore, necessary to study the amount of accommodation in animals. We found that almost all the mammals on which we experimented accommodate only in a small degree (1 to 4 diopters), monkeys alone showing an accommodative power approaching that of human.

As to cats, Grossmann has lately arrived at other results than ours; he has found a very considerable accommodation, and believes this to be produced by an accommodative posterior lenticonus. Grossmann's experiments have been repeated in my laboratory, but we could not confirm them. We found in several young cats only a very small range of accommodation, exactly as we had found it before.

In birds we found the amount of accommodation very high (12 to 14 diopters and more), and the mechanism is here approximately the same as in the human eye. In none of these animals could we find any accommodative increase of intraocular pressure, while the least contraction of the external eye muscles increased this pressure considerably.

These experiments show that the supposed influence of accommodation on intraocular pressure must no longer be considered as a cause of the progression in myopia. The consequence is that there is no longer any reason to object to the prescription of fully correcting glasses; on the contrary, these glasses may have a good effect on the progress of myopia, inasmuch as the patient wearing such glasses is able to read and write at a considerable distance and without appreciable convergence. The ill effects of the latter is evident from our experiments.

I am glad to say that the results, to which I have been led entirely by physiologic experiment, are in full accordance with the views which are held by so many physicians of this country, and which are mostly based on practical experience. With us in Europe there are

still a good many ophthalmologists who are opposed to full correction of myopia, cheifly in consequence of erroneous views which they hold on accommodation.

I think the experiences I have reported are, in the struggle against myopia, of decisive importance; it can not be too firmly insisted on that up to the present time there has no fact come to light which could even make it probable that full correction could do the slightest damage to the myopic eye. But a long experience of thousands of cases has shown us that the wearing of weak or even of no glasses is powerless to protect the eye from progressive myopia and all its dangers.

Allow me to insist on another point of practical interest. If the views which uphold the theory of accommodative tightening of the zonula and increase of intraocular pressure by accommodation were correct, eyes disposed to glaucoma ought to avoid any accommodation, for this would be most dangerous for them. And, indeed, even the most distinguished ophthalmologists prescribe for such patients strong convex glasses in order to avoid, as much as possible, accommodation. Now, in studying these questions I have found no way of explaining the ill effect of accommodation on glaucoma, and I never have seen a case in which such an influence was even likely. And what is more, is it not strange that in glaucoma on the one hand, avoidance of accommodation is insisted on, while on the other hand eserin is continually prescribed, which produces a powerful spasm of accommodation? Since I pointed out this striking contradiction careful observers have remarked that, in eyes with incipient glaucoma, strong accommodation is able to interrupt the glaucomatous attack or, at least, give a decided relief. I think that the views set forth here may be valuable in prophylaxis and therapy of incipient glaucoma.

Another important question is the following: It has been generally supposed that the more the contraction of the ciliary muscle increases, the nearer the punctum proximum approaches the eye. The maximum of lens convexity has been supposed to occur only as the result of the maximum contraction of the ciliary muscle.

This is evidently not correct. When the muscle contracts the lens changes its shape to a certain degree only, a degree which depends on the patient's age. I call this point the "true" punctum proximum, and the corresponding range of accommodation the manifest range. When the lens has attained the maximum convexity possible at a certain age, and if then the muscle contracts still more the lens may be displaced downward by gravity, but does not further change its shape. The true punctum proximum remains at the same point, but with the increased contraction of the muscle there is associated a contraction of the pupil which allows us, if we use the usual methods of determination of the punctum proximum, to bring a little nearer to the eye the object which is to be seen distinctly. So we find another proximum, which has been generally believed to be a consequence of increased lens curvature, but I have been able to show that the convexity is the same in both cases. Let us call this second point the "apparent near point."

In the same way the apparent proximum is brought nearer the eye by eserin, but the lens convexity remains the same as in the case of simple accommodation. Any patient can contract his ciliary muscle much more than is necessary for the maximum convexity of lens. Let us call this the "latent range of accommodation."

Now, it can easily be seen that the older the patient is the more his latent range of accommodation increases, and at the age of 65 to 70 years the whole muscle contraction is latent, but the muscle may be as strong and energetic as in youth. Here again we are in contradiction with generally held views. Often has it been asserted that in old people the muscle might become atrophied by inactivity. On the other hand, it has been supposed that in the case of old patients a greater contraction of the muscle would have to take place in order to increase the lens convexity than would be required to produce the same effect in youth. Both views are erroneous.

The same contraction of the muscle may, at different periods of life, give exactly the same increase of lens convexity, and the association between convergence and accommodation being a congenital one and remaining practically unaltered during the whole life, the muscle does not become inactive and can, therefore, not become atrophied by inactivity.

Some practical consequences of this are the following: In a young patient of from 10 to 15 years a slight paresis of the ciliary muscle may be detected by the displacement of the punctum proximum to a greater distance, but a much higher degree of paresis of the muscle is not to be discovered in a patient of from 40 to 50 years if the paresis is smaller than the latent range of accommodation.

According to the views generally held, especially those of Schön and Tscherning, any paresis of the ciliary muscle should produce a displacement of proximum to a greater distance, and, indeed, one sometimes reads in scientific papers that patients of 40 or 50 years of age are supposed to have normal accommodation and a normal ciliary muscle when their proximum is found at the normal distance. Nevertheless, such patients may have a high degree of paresis. We may say that a paresis of the ciliary muscle is not to be found by objective methods before the paresis has become larger than the latent range of accommodation.

This law is important, for instance, if we want to study the physiologic action of drugs on the ciliary muscle. For example, different opinions have been put forward as to the influence of cocain on the ciliary muscle; the fact is that at the age of from 35 to 40 years we find little or no effect on the true proximum, but its removal from the eye is evident in younger men, and the younger they are the more evident it is and the more quickly it occurs. So, studying to-day on my own eye, by determination of the proximum, the effect of cocain, I find the drug without influence on its position, but studying its effect by the entoptic method which I have described above I find that after cocain there is no displacement of the lens by gravity, even in maximum accommodative effort; this shows that cocain acts on my ciliary muscle. We have then in these entoptic methods a most delicate means for studying the action of drugs on the ciliary muscle. But this method, it is evident, is only to be employed by experienced investigators and can not be used on the average patient. It is, therefore, important to know that up to date we have no means at all of finding out whether the ciliary muscle of a patient of 60 years is normal or completely paralyzed.

Let me now say a few words on the so-called "spasm of accommodation." For a long time such spasms were believed to be very common among children and to have a certain importance in the development of myopia. In Germany some authors have written that in schools 10 per cent. to 20 per cent. of the children show this spasm, and these men have believed it could pass into

true myopia. It is difficult to see how this could be possible, since we know that such a spasm, if it exists, can have no influence on intraocular pressure.

I have studied many thousand children carefully, but never have found a case of spasm of accommodation. As a rule the diagnosis of spasm is made when children require a stronger glass for seeing at a distance than that which has been determined by the ophthalmoscope. But this can not prove the presence of a spasm of accommodation. The ophthalmoscopic or even the retinoscopic determination of refraction can never, with perfect exactness, give us the true refraction at the fovea of an eye. This determination of refraction is still sometimes made on eyes with dilated pupils. But here the optic conditions are so different from the normal that it is impossible to come to a conclusion as to the normal refraction of a patient's eye. The refraction of the peripheric parts of cornea and lens may differ from the central ones, the degree of astigmatism may be another one, etc.

I have often found, and other physicians have stated similar facts, that children by the first examination with glasses seemed to be myopic, requiring glasses of from 2 to 3 diopters. But further examination shows that an equal power of vision resulted from the use of plain glasses, sometimes the frame alone, without glasses being sufficient to cause the myopia to disappear. I think it would be a mistake to call such cases spasm of accommodation. Some authorities believe this to be hysterical, and if we find such a spasm in patients with other characteristic symptoms of hysteria we may allow ourselves to call the spasm "hysterical," but if the patient seems completely healthy—and this is the rule—we ought not to call this phenomenon a hysterical one. I should most like to compare such a phenomenon with other more common ones in children, which are either simple inability or so-called "associated movements." This inability to see at a distance would then be of the same order as the movements of the tongue or faulty movements of the fingers which we often see in children when they begin to write.

The view we take of this question is important for the prescription of glasses: As soon as oculists generally admit that there is no accommodative spasm in beginning myopia we may hope no longer to meet with instillations of atropin continued for weeks or months as a treatment of incipient myopia, as still sometimes happens to-day.

Often we find our patients afraid to wear convex glasses for presbyopia, believing it necessary to exercise the eye. Such an opinion might be reasonable if the views of Tscherning and of Schön were right, but they are incompatible with what we know by our experiments about accommodation. No amount of exercise can have any effect on the maximum of lens convexity.

We still sometimes meet with the opinion that the range of accommodation in hypermetropic eyes is larger than in emmetropic ones and in myopic eyes smaller, because in the hypermetropic eye the muscle contracts more, is more "in training" than in the myopic one, and that people who read much have for the same reason a larger range of accommodation than country people. Such views also are erroneous. If they were correct it would have to be supposed that the lens in hypermetropic eyes and in the eyes of people who read much is smoother than the lens in myopic eyes and in those of country people. In fact, the range of normal accommodation is independent both of refraction and occupation and only influenced by the age of the patient. This fact is often forgotten in prescription of glasses for myopia.

I think that these statements are of importance in discussing the question of the so-called "eye-strain." An "eye-strain" caused by the ciliary muscle can occur in hypermetropic patients, but not in old emmetropic eyes; we must not forget that increased contraction of the muscle in emmetropic persons of from 40 to 50 years is of no use for reading and that, therefore, they do not contract their ciliary muscle so as to have any trouble by it.

Up to the present time, it has been generally admitted that, in youth, the index of the lens cortex is much smaller than the index of the nucleus and that this index increases slowly and continually from cortex to nucleus, so that the index curve might be represented by a parabola (Matthiessen). I believe this opinion to be incorrect. The increase of index from cortex to nucleus is not a continuous one, but there is from the age of 20 to 25 years always a most marked and sudden increase at the limit of the nucleus, and the difference between the index of cortex and nucleus increases with the age of the patient. These facts I was able to prove, having discovered that we find in the lens not only the well-known cortex or Purkinje reflex images, but from the age of about 25 years always a further two, which may be called the "nucleus images." The luminosity of these images increases with increasing age; often in absolutely normal lenses they are at the age of 40 or 50 as bright as the Purkinje images.

This statement shows that refraction of light in the human lens is still much more complicated than had up to the present been supposed. In fact, we have in the lens not two refracting surfaces, but four, and the influence of the nucleus surface increases continually with the age.

Another interesting consequence of this fact is the following: Donders supposed that senile hypermetropia might be explained by increase of the cortex index of the lens in advanced age, while he believed the nucleus index to increase much less, so that the lens became more homogeneous. Our experiments show that this theory can not be sustained, that, on the contrary, the difference between cortex and nucleus index is greater in age than in youth. I believe that the convexity of the lens surface diminishes in the old, and that this is the cause of senile hypermetropia. Further investigations are necessary for clearing up these questions.

Another interesting question is whether the range of accommodation is always the same in both eyes or if we are able to correct anisometropia by accommodating with one eye more than with the other. As you know, a lot of experiments have been published to show that such an unequal accommodation is possible. Evidently it would suit us very well if we could do so, and in prescribing glasses for anisometropia it is very important to know whether we can accommodate unequally or not. I have made many investigations on the subject, partly with special apparatus which allows a most exact determination. But never, either in artificial or in natural anisometropia, was I able to find the slightest difference in the range of accommodation of the two eyes. Even in a completely blind eye accommodation is the same as in the normal eye (of the same person), as Zimmermann has shown.

The following question has, perhaps, a still more practical importance: Is it possible, by contracting only

certain parts of the ciliary muscle, to produce an astigmatism of the lens so as to eliminate by this means an opposite astigmatism of the cornea? You know that a great many oculists believe in such a possibility and suppose that this "astigmatic accommodation" may be the cause of different diseases of the eye, as blepharitis, glaucoma, cataract and others. The fact that such views are held necessitates a most careful investigation of the question. This I have made by several different methods and have never found a single fact which would make such an astigmatic accommodation probable. None of the astigmatic patients whom I have studied showed the least sign of partial contraction of their ciliary muscle.

Most observers who have studied the question suppose that astigmatic patients always accommodate in such a manner as to bring the object into the anterior or the posterior focal line, and this should be the case even when the object appears here less distinctly than it would if the eye accommodated on another point of the interfocal space. Now, I have tried to find out at which point of this space the object is seen most distinctly. I took photographs of different print types with an astigmatic apparatus. I found that the photographs were least indistinct about the middle between the anterior and posterior focal lines.

Although the conditions in the human astigmatic eye are more complicated than in the apparatus, we may, nevertheless, say that most probably the astigmatic eye, as a rule, sees best when it accommodates in such a way that not a so-called focal line, but a spot which is approximately in the middle between both focal lines, is brought on to the retina. In any case I do not know of any observation that would make the possibility of astigmatic accommodation for correcting corneal astigmatism probable. So when we prescribe glasses we no longer need to regard this hypothesis.

It is needless to say that I speak here only of voluntary partial contraction of the muscle; whether there exists an involuntary partial spasm of the muscle is not as yet known. If you instil a drop of atropin or eserin so as to bring it only to the inferior part of the cornea the drug by diffusion comes more quickly to the inferior half of the muscle than to the superior half, and this may produce for a few minutes an astigmatism of the lens, but such a fact has no clinical interest at all for our question.

The new facts in the accommodation which we have pointed out here bear on the question of relative accommodation and the association between accommodation and convergence. These are rather complicated, and it would be rather tedious for you were I to discuss here the whole subject. Let me give you a short outline of the plan which I have followed in these investigations.

Since the days of Donders it has generally been admitted that the so-called curves of relative accommodation are in all their points determined by physiologic relations between the range of convergence and the range of ciliary muscle contraction. But this is not possible, since these curves are produced in their different parts by completely different factors. I was able to show by measurement that both the relative proximums and the relative remotums lie in the manifest accommodation space on two straight lines, which are parallel to the so-called convergence lines, and that they are limited by a horizontal line, which we may call the "near point abscissa."

It had been supposed that accommodation to the punctum proximum necessitates always a maximum contraction of the ciliary muscle. If this were true it would be necessary that the relations between convergence and accommodation should change continually with advancing age. And we should up to the most advanced age be compelled to associate an always increasing innervation of the ciliary muscle with the same convergence innervation. But at the age of from 60 to 70 we should be obliged either to contract our ciliary muscle *ad maximum* with the slightest convergence and without any practical effect, or we must suppose that, late in life, we should again have to learn to converge without any or with very small ciliary muscle contractions. Both suppositions are most improbable.

According to these views, which were partly those of Donders, in the years of incipient presbyopia we ought to behave like hypermetropic patients, we ought to have accommodative asthenopia and convergent strabismus. According to my views, the relations between accommodation and convergence remain the same during life; the diagrams I find for relative accommodation are quite different from those which have been generally adopted, but the diagrams of Donders may be easily explained by the conditions under which he made his measurement.

I will now leave these rather complicated questions and try to review the most interesting facts with regard to comparative physiology of accommodation. In the mammalian eye we find everywhere the same mechanism: slackening of the zonula by contraction of the muscle. As to the range of accommodation, we have seen that only in monkeys it is similar to that of man; all other mammals which we investigated had only a very small range of accommodation even in youth, and we find this not only in our domesticated animals, but equally in wolves, for instance.

It is a most interesting fact that Rabl has recently come to corresponding results by means of anatomic investigation. The disposition of the cortical lens fibers in man and monkeys is a rather irregular one, just as it is to be expected in a substance, which must be able to change its shape very quickly and easily. In all other mammalian lenses the radial lamellæ of the lens show a much more regular disposition of fibers, corresponding to the relatively slight accommodative changes in such lenses. This is a most remarkable agreement between the results of physiologic observation and of anatomic conditions.

In birds the accommodation is produced equally by contraction of the ciliary muscle and slackening of the zonula. The range of accommodation is here similar to that in man. Regarding the necessity of accommodation in different animals: As to birds, it is evident that a high range of accommodation is necessary for them, for the grains which form their food are very small and must be picked up with the beak. Grossmann, in his studies on cats' accommodation, said that cats must have a high range of accommodation, too, but I think this is not necessary; when the cat catches a mouse it does not require much accommodation in order to see its prey, nor is it necessary that it should be seen quite distinctly. Moreover, the cat catches the mouse with its claws; therefore, I do not think that our results as to the small amount of accommodation in cats are in contradiction with the biologic conditions.

Theoretically, accommodation seems possible in the following ways:

1. Change in the convexity of the cornea. It is still unknown whether, practically, such an accommodation

takes place or not; perhaps it exists in birds' eyes; at least we find here the most interesting fact, that by ciliary muscle contraction the inner lamellæ of the cornea are displaced toward the anterior lamellæ.

2. Change of position of the retina. Formerly, even for the human eye, this mechanism was admitted, and of late years some oculists have asserted that the so-called accommodation in aphakic eyes was to be explained by a slight displacement of the retina backwards. But this aphakic accommodation is, no doubt, only an apparent one; by careful observation we can show that the aphakic eye lacks any accommodative change. Whether in animals an accommodation is possible by change of the axis is not yet quite certain; it may perhaps be possible in cephalopods' eyes; here we find the sclerotic extremely thin and changing its position on the slightest pressure.

3. A third possibility of accommodation is the displacement of the lens forward or backward without or with change of its convexity. This interesting mechanism is to be found in fishes' eyes (Beer). The eyes of fishes show, when at rest, myopic refraction of from 5 to 6 diopters; they have a negative accommodation, that is, for the distance, and this is performed by approaching the lens to the retina; the lens itself does not change its shape.

This movement of the lens is produced by a band-like muscle, "campanu'a Halleri," which stretches from the inferior part of the lens to the retina, the upper part of the lens being fixed to the sclerotic. By contraction of the muscle the eye can become approximately emmetropic.

A most interesting peculiarity is this: The movement of the lens is not directed straight backward, but backward and a little to one side, so that the image of an object is displaced sideways from the original position on the retina.

The fish's eye is thus seen to be wonderfully adapted to its task; as a rule the fish has to see near objects and is only exceptionally called on to see to far distances; it never becomes presbyopic, and by the lateral movement of the lens the fish is enabled to follow an enemy's movement without moving the eye.

In cephalopods' eyes a similar mechanism takes place, yet here we have no campanula, but a ciliary body very similar to that of mammalians; its contraction draws the lens backward, so that here also we have normally a negative accommodation at a distance.

The mechanism of lens displacement, without change of convexity, is also to be found among reptiles; some of them seem to have a very slight range of accommodation, others, as for instance, the turtle, a larger one. Here a most remarkable positive accommodation takes place by advancement of the lens, which is in part produced by an increase of pressure in the vitreous, so that the lens is pushed forward through the pupil; it is very easy to observe this wonderful phenomenon in enucleated turtle eyes.

The interesting details on the comparative physiology of accommodation are inexhaustible. I wanted to show the different ways by which Nature has realized the problem of adapting the eye to different distances. As to human accommodation, I hope I have shown that many important questions, which at the first glance seem to be merely practical, are in intimate connection with physiologic science and can be elucidated by physiologic experiment. Any progress in our practical work should be preceded by scientific investigation.

EXPERIMENTAL PATHOLOGY AND SURGICAL TREATMENT OF ERYSIPELAS.*

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Since the discovery of the staphylococcus as a cause of suppuration and the streptococcus as the cause of erysipelas these organisms were found in many other conditions, and hence have long since lost their position as the cause of suppuration and of erysipelas only.

The streptococcus is found in septicemia and as a complication of diphtheria and other affections; while the staphylococcus is found in furuncles, carbuncles and all abscesses of a subacute nature.

When a wound is infected in these days of antiseptic precautions, pus abounds at first with staphylococci alone. In pre-antiseptic days, when pus was considered an almost desirable condition, when wounds were uncleansed, an erythema corresponding to erysipelas soon developed, accompanied by the clinical manifestations characteristic of this disease. It was evident that what seemed to be an ordinary infection could, when neglected, transform itself gradually into a more marked and virulent form, to be followed by general septicemia. At present these complications are not allowed to manifest themselves owing to prompt antiseptic cleansing.

The phenomenon, however, was apparent that if wounds were not cleansed the infection, which seemed moderate at first, would become more and more aggravated, apparently erythematous erysipelas or violent phlegmonous erysipelas, resulting in gangrenous cellulitis or hospital gangrene. Especially was this the case if the infection took place in the superficial lymphatics where phagocytes are not so plentiful as in the deeper or cellular lymphatics, and where the opsonins could not so readily help in the process of destruction.

Clinical experience has proven this point. If, however, the infection be locked up in the subcutaneous tissues, then an abscess, which may be strictly circumscribed at first, becomes more and more virulent in appearance. These clinical phenomena led me to experiment with the staphylococcus and streptococcus under various conditions to see whether or not it was possible to alter the virulence of these apparently dissimilar organisms so as, in a measure, to explain the clinical phenomena.

The following experiments were carried out by me in the bacteriologic laboratory of the Medico-Chirurgical College. The streptococcus was isolated from a virulent case of septicemia, which proved fatal in eight days' illness. It gave the typical growth on gelatin and agar.

Tubes containing 10 c.c. of bouillon were inoculated with virulent streptococcus, one tube being kept neutral. To a series of eight were added a 1 per cent. solution of bicarbonate of soda in minims of 2, 4, 6, 8, 16, 32, 64 and 100 respectively; likewise to the same number of minims was added a solution of hydrochloric acid, 1 to 1,000. This whole series of acid, neutral and alkaline media were then placed in an incubator at 44 degrees C. The result of this experiment showed a plentiful growth of streptococci in the neutral tube. The streptococci also grew in the series of acid tubes seemingly well, but losing the chain-like arrangement and partaking more and more of the staphylococcic or grape-like arrangement, until they seemed typically staphylococcic in the tube containing 100 minims.

When a gelatin culture was made from the tube containing

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100 minims of the acidulated solution, the growth produced appeared typically as an ordinary *Staphylococcus albus*, the appearance of the original streptococcus having been altered in the acidulating process.

On the other hand, throughout the whole series of alkaline tubes, the organisms grew, retaining their typical streptococcic appearance. The alkaline group retained the toxic conditions, while the acid group seemed gradually to lose it. It became evident to me, therefore, that in the presence of a streptococcic infection an acid antiseptic medium would more readily diminish the virulence of the streptococcus, and would tend to restrain the development, and gradually destroy it, than a neutral or alkaline antiseptic solution.

In 1887[1] I published an article which demonstrated, for the first time, that the coagulating power of the bichlorid of mercury solution, when coming in contact with the blood, would disappear by acidifying this solution. In this way the original antiseptic power of bichlorid of mercury would not only be retained in presence of albuminous substances, such as blood, but also be greatly enhanced. This was done by the addition of 5 parts of hydrochloric acid to a solution of bichlorid of mercury, 1 to 1,000. I also at that time, for practical purposes, embodied the same idea in the shape of an acid sublimate tablet by which solutions could readily be prepared; that is, a combination of tartaric acid with bichlorid of mercury, which is now used extensively.

The experiments thus produced seem to fulfill all the expectations claimed for them in making the bichlorid of mercury solutions more reliable than ever before.

I have treated erysipelas by local applications of acid, bichlorid of mercury, ice-cold solutions. I did not suspect at that time the additional fact that acid medium, as demonstrated by the experiment just related above, would have the added property of so altering the soil as to mitigate at once the virulence of the streptococcus.

The virulence of an attack of erysipelas depends not only on the virulence of the infecting streptococcus, but also on the propitious quality of the patient's soil—the more alkaline the medium the more rapid and more virulent the development of erysipelas.

The opsonic index in cases of erysipelas is not always the same, and depends largely on the relative alkalinity of the patient's serum. A clinical fact of great interest has been the lack of immunity which erysipelas affords after an attack; on the contrary, an attack of erysipelas leaves the patient more susceptible to future attacks, showing that the opsonins of erysipelas are either very scanty or else disappear from the system for some unknown reason.

Perhaps the most important light thrown by Pasteur on infection was the fact that a micro-organism would be increased and decreased in virulence under different surroundings, giving pathologic manifestations of very different intensity.

The truth of this discovery is especially manifest in the fact that, while suppurative foci do occur now and then in operative cases, they are seldom or never found in the hospital clinic as was frequently the case in pre-antiseptic days.

When the suppurative process was started, it was rather favored in its development than checked on the supposition that pus consisted of the foul humor of the body finding its exit through the wound. The retention of pus locally in the foul surroundings allowed the organisms to rise in virulence and gradually to assume a degree that would result in symptoms of erysipelas. When a patient was contaminated from a wound in which the organisms had reached such a violent stage, erysipelas would start from the outset. This occurrence is rare now, because of the care with which infected wounds are sterilized from the first.

If, however, the infection has already taken place, the phagocytic action of the blood must be increased by the administration of heart tonics, such as strychnin, digitalis and tincture of the chlorid of iron. Local. acid, ice-cold solution, according to my formula mentioned above, affords the best antiseptic action for this purpose; it should, however, be made to gain direct access to the infected structures. Since the infection exists in the lymphatic vessels, it is proper to make scarifications of the skin according to Esmarch—especially for two or three inches beyond the infected area—so as to lay open the lymphatic vessels. The venous capillary hemorrhage that ensues allows the vast numbers of infected streptococci to escape, while the ice-cold solution of bichlorid of mercury applied to the lymphatic vessels comes in direct contact with the streptococci in their course of absorption.

Should the nose or some delicate part of the face be infected, the scarifications can be replaced by copious acupuncture. A compress is kept to the parts constantly wet with the solution. Cold, as here applied, is made the medium which contributes to the destruction of the streptococcus. Should the case become complicated by a deeper infection involving the cellular tissue, an incision should be made over the affected area for thorough drainage and for the further sterilizing of the wound. I believe that all the indications are met directly in this manner.

The use of an acid, ice-cold bichlorid of mercury solution, as well as the scarification of the infected area, constitute the main points of advantage over the methods generally used.

In making the scarifications, the skin is stretched, and the lymphatic vessels and capillaries are distended; the weight of the blade only should be the pressure at the cutting edge. Sufficient force is thereby exerted to obtain the desired result; that is, an opening in the lymphatics. The skin being distended, owing to the attack of erysipelas, the scarifications do not amount to any more than a pin scratch.

My experience in a large number of cases both in hospital and private work has resulted in unfailing success by checking. from the first, the starting infection; for I believe that through the constitutional tonic treatment with the tincture of the chlorid of iron and the local antiseptic measures all the indications of this violent form of infection will be conquered.

From the above I conclude that:

1. Erysipelas varies in its form of attack according to the violence of the streptococcus at the time of the invasion.

2. The receptivity of the patient is also an important factor.

3. Acid media of themselves diminish the violence of the streptococcus.

4. Simple alkaline medium tends to increase the virulence.

5. Our antiseptics become more potent if the solution is acidulated.

6. Direct contact of antiseptic solution with the streptococci in the lymphatics can be obtained by gentle scarifications of the reddened area, and that the course of the organisms can be stopped if the scarifications are

1. Deutsch. med. Wochschr., No. 40, 1887.

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made for an inch or two beyond the diseased surface, allowing the solution to arrest and destroy the organisms on their inward path.

DISCUSSION.

Dr. A. J. Ochsner, Chicago, thought Dr. Laplace's suggestions worthy of trial. If it is possible to change the virulence of the streptococcus regularly in this manner, the paper, he stated, marks a very important step in the progress of therapeutics and in our ability to manage this disease scientifically. The change from streptococcus to staphylococcus seems most remarkable. So far as the practical part of the paper is concerned, he would look on it with very much less enthusiasm than on the scientific observations which it contains. There is no doubt but that, in cases of erysipelas seen early, it is a simple matter to dispose of the infection. Dr. Ochsner called attention to the fact that about fifteen years ago the *Berliner klinische Wochenschrift* contained an article based on a very large number of observations made in one of the German prisons where erysipelas was endemic. The medical director of this prison discovered empirically that if these prisoners, at the very beginning of the attack of erysipelas, were at once treated by means of careful washings with strong alcohol, repeated at intervals of an hour, directed toward the point of infection instead of away from it, in order not to carry the infection further, he could regularly abort the disease. The number of cases observed in this prison was so large, and the description of the cases seemed so honest and reasonable that from that time Dr. Ochsner has used this treatment and he has found it reliable. Since that time recurrent cases of facial erysipelas that have come under his observation, and the observation of those who have worked with him, have invariably resulted in cutting short the attack when this mode of treatment was employed. Of course, he said, it is possible that the use of alcohol in this manner has an effect similar to that of the acid described in the paper. These observations, he thought, show either that these aborted streptococci will return to be virulent streptococci or that they remain indefinitely in the staphylococcic form. If there is any uniformity in this, it is certainly a most important observation. Of course it is known from clinical observation that there is a tremendous difference between erysipelas and erysipelas. There are cases of erysipelas that never amount to anything so far as their severity is concerned, although they may extend over the entire body. Other cases run a very severe course, and, he thought that the facts stated in this paper might be an explanation of the clinical observations with which we are all familiar.

Dr. Ernest Laplace, Philadelphia, said that the streptococcus, when cultivated in an acid medium at 104 F., seems gradually to diminish in virulence. Pasteur laid special stress on the varying virulence of germs under different circumstances. A notable example of this consists in what takes place in inflammation of the appendix, where the micro-organisms, being located within the cavity, gradually increase in virulence to the extent of causing gangrene, reminding one of the bygone days of surgery where lack of antiseptic precautions favored the development of hospital gangrene.

The Best Professor of Clinical Medicine in the World.—A breezy little article giving advice to a medical student in the *Gaz. Méd. Belge*, page 352, concludes with the remark that the best professor is the patient himself. "Besides what you can learn from him, all the rest is of trifling importance. He is the one you must listen to, for he will not deceive you nor brag of his own ideas and discoveries, and while you are listening devour him with your eyes. Try to get on the best terms with him. Go to him early in the morning. Be the first at the hospital; you can leave when you choose after every one else is there. In taking your vacation, plan to be in the hospital when the rest have gone on their vacations. In selecting teachers seek those who talk to the patients rather than about themselves at the bedside."

THE SUDDEN APPEARANCE OF APNEA IN THE COURSE OF TABES DORSALIS AND ARTERIAL SCLEROSIS.*

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The first patient, a young married woman 26 years old, had a syphilitic infection seven years ago. The past six months the patient has suffered from lancinating pains in the thighs and legs. She has also been annoyed with the feeling as though there was some substance interposed between the soles of her feet and her shoes. There have also occurred several attacks of nausea and vomiting, which, from her description, could very well have been gastric crises. Besides these attacks of nausea and vomiting there were no signs of vagus involvement.

Recently the thigh and leg pains grew so intense that morphin was required to allay the pain. The patient showed no disturbance of coordination. The pupils reacted sluggishly to light. The patellar and ankle reflexes were absent. The tactile sense and perception of temperature and of tuning-fork vibrations were unimpaired. There was, however, well pronounced hypoalgesia in the feet, legs and thighs, and the plantar surfaces of both feet exhibited a marked delay in transmission of the pain sense. The absence of patellar reflexes, the presence of hypoalgesia and delay in transmission of the sense of pain without trophic symptoms or any other signs, of multiple neuritis or syringomyelia, justified the diagnosis of tabes dorsalis. During the morning of the same day on which I examined her the patient was given ¼ grain of morphin hypodermically. About forty minutes after the injection of morphin the patient suddenly, and without the slightest sign of distress, ceased breathing and lapsed into a semicomatose state. The attending nurse used artificial respiration for about twenty minutes, when suddenly automatic respiration and consciousness were simultaneously resumed.

The patient had been given ¼ grain morphin hypodermically as I entered the house, and a few minutes after I had finished my examination there recurred the same symptoms seen in the morning. The patient became unconscious and ceased breathing. There was a slight cyanotic tinge to the skin of the whole body, the lips were pale and cyanotic. The pulse, which had been 80 up to the advent of apnea, now had a rate of 120. The radial artery widened its lumen. The diameter of the radial artery seemed to have increased threefold, but the maximum pressure was greatly diminished. At the same moment a pulsation in the dorsal veins of the hands was plainly visible. The pulsation was centripetal and strictly synchronous with the arterial pulse. The veins of the hands were dilated, but there were no signs of stasis from the right heart, either in enlargement of the heart's area of dulness to the right or dilatation of the jugular veins. In other words, the patient had vasomotor relaxation in the veins as well as in the arteries. The instant automatic respiration was resumed (after a lapse of about twenty minutes) all signs of vasomotor relaxation disappeared; the artery retracted to its original caliber. The veins retracted at the same instant to their usual size, the venous pulse disappeared and the pulse rate dropped from 120 to 80.

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

All these changes in the vascular phenomena occurred instantly and with the return of consciousness and automatic respiration. We did not permit the patient to remain in the apneic state for a longer time than thirty seconds without employing artificial respiration. During the entire period of twenty minutes the apnea was unbroken by a single complete respiratory effort on the part of the patient. At the conclusion of a series of artificial respirations there would be a very slight indication of an inspiratory effort, but not sufficient at any one time to inflate the lungs. So during a lapse of twenty minutes the patient's sole respiration was artificial. There was a striking disproportion between the degree of cyanosis and respiratory disturbance. The slight cyanotic tinge to the skin seemed to be dependent on the vasomotor phenomena rather than on the apnea.

Another patient, a man 33 years old, who had a syphilitic infection eight years before, came recently under my observation. This patient had no ataxia, but he had unequal pupils which reacted sluggishly to light but more promptly to accommodation. The patellar and ankle reflexes were both absent, though he assured me the patellar reflexes were present only two weeks prior to the time he consulted me. This patient had a fracture of the internal malleolus of the left leg, crepitus could be elicited and, though the patient perceived the grating, it caused him no pain. The tuning-fork vibrations were clearly perceived over the whole body as well as over the fractured fragment. Perception of temperature was everywhere intact. The tactile sense also was normal. There was, however, a marked hypoalgesia over both thighs and legs and a marked delay in the transmission of pain over the hypoalgesic areas.

There was a clear history of gastric crises and intestinal crises accompanied by rectal hemorrhages; severe lancinating pains in the thighs and legs had persisted for three years, and there was hypotonia of the muscles of the thighs and legs. These symptoms were sufficient to convince me of the existence of tabes dorsalis.

The patient told me that a year ago he received a hypodermic injection of morphin (¼ gr.) for the relief of supposed sciatica. About thirty to forty minutes afterward he suddenly lapsed into unconsciousness and ceased breathing and for fifteen or twenty minutes artificial respiration was employed. When consciousness and automatic respiration returned he could remember nothing of what transpired, so his loss of consciousness was complete. A few weeks later morphin was again given him for the same purpose, but this time only ⅛ grain of the drug with 1/100 grain of atropin were used. Exactly the same events followed as after the former dose of ¼ grain. Apnea and loss of consciousness supervened about thirty minutes after the injection of morphin was given and lasted about fifteen minutes.

Both these patients on frequent occasions had received hypodermic injections of morphin on account of lancinating pains without the least untoward results. On account of the alarming signs which developed twice in each patient morphin was not again used for several months, but later injections of morphin were used without the development of any respiratory or circulatory symptoms.

Both these patients exhibited signs of profound hypoesthesia of the respiratory center at a time varying from thirty to forty-five minutes after the administration of morphin. This is the time which uniformly elapses between the administration of morphin and the maximum respiratory depression in animal experiments. Both the patients were in the preataxic state of tabes dorsalis. They were both in a period which marked the transition from symptoms of excitation to symptoms of depression. Both patients had suffered from involvement of the vagi as evidenced by gastric crises. Neither patient had any recurrent laryngeal symptoms.

There seems to have existed in these patients a certain depression of cellular response of the respiratory center, though insufficient to cause any symptoms. The added depressor effect of a small dose of morphin sufficed to cause hypoesthesia of the respiratory center and precipitated the attack of apnea. Though I witnessed only one of the four attacks mentioned, it seems reasonable to suppose the vasomotor symptoms described in one attack must have occurred in all, because in all the attacks there was loss of consciousness, and that depends on vasomotor and not on respiratory depression.

It seems certain death would have followed in each instance had not artificial respiration been employed by persons in attendance on these patients. We occasionally hear of death after the administration of small doses of morphin, and this experience suggested possibly there may be found in medical literature some fatalities which occurred in tabetic patients after administration of moderate doses of morphin.

Suppose one of these patients, suffering from what is believed to be sciatica (but in reality has the sciatic pains of an early tabes dorsalis) finds himself in a strange hotel and a physician is summoned who gives him a hypodermic injection of a quarter grain of morphin. In about fifteen minutes the acute pain is subdued and the patient is left alone. Should unconsciousness and apnea follow after the usual elapse of time I believe death would follow.

I was unable to find any such case reported in the Surgeon General's Library. All the reported cases of apnea or Cheyne-Stokes respiration following the use of morphin proved to be cases of cardiovascular disease, or patients who could not be said to have locomotor ataxia. With a single exception, in the literature on locomotor ataxia, the only respiratory symptoms described are the laryngeal crises. This exception is found in a case reported from Salpetrière in 1899 by Eggers.

This patient had tabes ten years. She was bedridden on account of paresis, muscular atrophy and ataxia. She had suffered many laryngeal, gastric and intestinal crises, so there was sufficient evidence of vagus involvement. This patient had a usual automatic respiratory rate of three to five to the minute. After eating a meal or drinking hot liquids the respiratory rate would rise to thirteen to the minute and then gradually lapse to three or five to the minute. If the patient would take about ten deep inspirations, there followed immediately a total suspension of automatic respiration for sixty seconds, then automatic respiration resumed at the rate of two a minute, and within a few minutes rose to the usual rate of three or five. In this patient there was no disturbance of consciousness during the periods of apnea, and no vasomotor symptoms are described.

To avoid stimulation of the vagi by sectioning, Gad and Marckwald devised the plan of freezing both vagi, in a dog, and in this manner procured a bradyapnea of three or four a minute.

We find under other conditions a behavior of the respiratory center very like the cases above described. The one example of apnea with which all physicians are familiar is apnea at birth. Here we have a hypoesthesia

of the respiratory center caused by the manner in which either the placental or umbilical cord circulation is affected during parturition. A sudden interruption of the placental circulation or a sudden compression of the umbilical cord stimulates the respiratory center of the fetus, and as a result the child is born asphyxiated from inhalation of the contents of the utero-vaginal tract. If the cord or placental circulation be very gradually obliterated for a protracted period, then exhaustion of the respiratory center follows and the child is born with apnea. Though generally automatic respiration is uninterrupted after once established, there are some cases on record in which lapses of automatic respiration occurred.

Morrow, of Montreal, reports the case of a child born apneic who, after the usual methods were employed for twenty minutes to stimulate respiration, breathed well. Several hours later apnea supervened and the child was cyanotic for half an hour; whether any automatic respirations occurred or not during this period is doubtful. Artificial respiration promptly restored automatic breathing. During the following twenty-four hours there were twelve attacks of apnea, but artificial respiration promptly restored the child. The child later proved to be perfectly healthy.

In Morrow's case we have an instance in which cellular response of the respiratory center had been modified during parturition. Unusually prolonged treatment was required at birth to establish automatic respiration. After respiration had been established for a period of several hours apnea suddenly developed without the least premonitory symptom and reappeared twelve times within the first twenty-four hours of extrauterine life. Thus we have another example of modification of the respiratory center without symptoms other than the sudden appearance of complete apnea. In this case there was neither organic disease nor drug intoxication. During parturition the respiratory center was depressed to a point which required treatment for twenty minutes before respiration could be established, but the tone of the respiratory center was insufficient to prevent recurrences of apnea.

Another case of tabes dorsalis recently came under my observation in whom sudden death occurred during an attack of apnea. The patient was a man, 37 years old, who gave a doubtful history of syphilitic infection in 1887. Four years later his wife had two miscarriages. Since 1903 the patient had suffered from lancinating pains in the thighs and legs and irritability of the bladder with occasional enuresis. The pupils were unequal and reacted sluggishly to light and to accommodation. The patellar and ankle reflexes were absent. All sensory perceptions with the exception of the perception of pain were normal. Hypoalgesia was confined to the feet, legs and thighs. On the plantar surfaces of both feet there was a marked delay in the transmission of pain. There was not the slightest impairment of coordination either in the upper or lower extremities. There was, however, hypotonia of the muscles of the thighs and legs.

A few weeks after I saw this patient he was seized with violent nausea and vomiting and epigastric pain. The patient was taken home and put to bed, suffering from a sense of profound exhaustion. He arrived at his home about 10 o'clock at night, and his family physician was summoned. The physician told me, during the time from 11 p. m. until 2 a. m., the patient had four attacks of apnea. Each period lasted a few minutes. About 2 a. m. the patient called to the doctor, who was in a neighboring room. By the time the doctor arrived at his bedside, respiration and heart beat had both ceased. No autopsy was made.

All these phenomena which I have described occurred in tabetic patients who were in the preataxic period and who could easily have been overlooked as cases of locomotor ataxia. In fact, one patient had been treated by diet and lavage for disease of the stomach, and one other was treated for disease of the prostate. In reality both patients were suffering from excitation symptoms of tabes.

In cardiovascular disease we see occasional lapses of respiratory activity which assume either Biot's or Cheyne-Stokes type of respiration. A man, 60 years old, with chronic aortitis, general arterial sclerosis, chronic interstitial nephritis and moderate hypertrophy and dilatation of the left ventricle, had for three months been suffering from nocturnal apnea, followed by prolonged apnea. For a year the patient had wakened frequently at night suffering from intense air-hunger; after breathing deeply for several minutes he would be able to go to sleep and rest for the remainder of the night. These attacks all came during the first hours of sleep. For three months he had been greatly distressed by complete suspension of respiration directly he fell asleep, and then awakened with intense air-hunger, which was relieved after a few minutes rapid deep breathing.

It was discovered he could avoid this period of intense air-hunger if he were awakened directly apnea commenced. So his wife would watch him as he fell asleep and waken him the instant respiration ceased. This plan enabled the patient to escape the period of air-hunger which always followed spontaneous wakenings. Very commonly he would have to be wakened as often as a dozen times before respiration would continue after falling asleep.

This patient presented the type of Biot's respiration, a modification of Cheyne-Stokes respiration in which apnea and hyperapnea alternate without the gradual increase and diminution in rate and depth of respiration which intervene between the periods of apnea in Cheyne-Stokes phenomenon. Owing to sclerosis of the basilar arteries with consequent impairment of blood supply to the medulla he suffered what may be termed intermittent claudication of his respiratory center. There was not the slightest sign of impairment in the gross hydraulics of his blood circulation so far as the right heart, pulmonary circulation, liver or the pendant parts were concerned. There were no signs of respiratory involvement during his wakening hours, but the instant the added factor of sleep ensued there was induced a sufficient anemia of the respiratory center to cause apnea, and automatic respiration was resumed only after the partial pressure of carbonic acid in the blood reached a point sufficient to arouse his depressed respiratory center to action. This train of events explains those cases of arterial sclerosis which waken with suffocation during the early hours of the night when sleep is most profound, and when examined during their attacks reveal no signs of pulmonary stasis, no emphysema or bronchial râles and no change in character or rate of the arterial pulse. It is not a dyspnea; it is a prolonged hyperapnea, and has for its basis circulatory changes in the medulla which are not insufficient to produce symptoms during the waking hours, but with the diminution of blood supply to the encephalon which comes with pro-

found slumber a sufficient anemia of the medulla occurs to produce hypoesthesia of the respiratory center.

Here we have again (as in the tabetic patients) a sudden precipitation of apnea from a slight cause which is only a cumulative factor in betraying cellular changes in the respiratory center which are concealed until the sudden development of apnea.

All the cases of Cheyne-Stokes respiration which are produced in cardiovascular disease by the injection of small amounts of morphin occur in elderly people or patients with arterial disease. In all these patients we have the cumulative effect of morphin on a respiratory center already affected by an impaired blood supply. The patient above described recovered from his respiratory symptoms after taking nitroglycerin and caffein citrate, a further proof of the theory I have presented.

A man, 71 years old, had Biot's type of respiration, i. e., sharply alternating periods of apnea and hyperapnea. The periods of apnea lasted as long as sixty-seven seconds. There were clinical signs, of arterial sclerosis, high blood pressure, pulse of long duration, hypertrophy and dilatation of both the right and left ventricles of the heart, and renal infarcts. During the periods of prolonged apnea the patient talked irrationally and incoherently; during the periods of apnea there was profound slumber. This clinical picture had continued for nearly three weeks when nitroglycerin, 1/100 gr. every hour, and 5 gr. of caffein citrate every three hours were given. Though there was moderate edema of the legs, the improvement which followed the treatment could not be ascribed to increased renal elimination. Biot's respiration ceased and the mental symptoms all disappeared within a few hours. The patient died suddenly two days later with symptoms of embolus in the pulmonary artery.

I cite these cases because I believe in cardiovascular diseases we are too ready to assume all respiratory distress must be ascribed either to impairment in the pulmonary circulation or to diminished secretion of urine; when in reality we are dealing with an ischemia of the respiratory center, and the other factors are merely coincident to the respiratory phenomena and not their cause.

DISCUSSION.

DR. ALLEN A. JONES, Buffalo, said that he had seen only one case of this sort, but this one case was sufficiently striking to make its impress on him for all time. A man of middle age, with tabes, who had been a morphin habitué for a number of years, took his usual quantity of morphin and smoked excessively during his stay in the hospital. One night the nurse reported that the man had stopped breathing and was dying. He was cyanotic but, under the influence of nitroglycerin hypodermically, he began to breathe again. Dr. Jones went to the hospital and for two hours that man went from one spell of apnea into another, but he finally recovered. During the attack he was given strychnia and camphor hypodermically. A few days afterward the man said he would stop his morphin and resort to an old remedy that he had gotten from answering an advertisement. One morning he was seized again with a "dying attack," and stopped breathing for three minutes. During this time he became very cyanotic, his pulse was small and frequent, but he responded to stimulation. He had several such attacks during the day and finally recovered. He is in better condition to-day than he was last year.

DR. C. F. HOOVER, Cleveland, Ohio, said that he thinks such occurrences are not uncommon, although he searched the literature and was unable to find a single case mentioned. He believed that if he had another such case of tabes with apnea, instead of resorting to artificial respiration, he would probably invert the patient to stimulate the respiratory centers. The same result will follow this procedure here as in tachycardia. A patient had a pulse of 240 to the minute for twenty-eight hours. He inverted her, heels up and head down. That was not sufficient, but when she took deep breaths it brought the pulse down to 120. Her condition was due to postoperative depression. The patients should be held inverted for two minutes.

THE PROBABLE DEMONSTRATION OF THYROID SECRETION IN THE BLOOD IN EXOPHTHALMIC GOITER.

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I showed in a former paper[1] that when small amounts of thyroid are fed for a few days to mice the latter acquire markedly increased resistance to acetonitrile.* Further studies have shown that this is an exceedingly delicate test for thyroid; as small an amount as one-tenth of a milligram (1/640 of a grain) of the official dried thyroid fed daily for a few days may enable a mouse to recover from double the dose of acetonitrile fatal to the controls. Thus it has been possible to detect as little as one milligram of thyroid. Dr. Seidell, of this laboratory, has found that forty or fifty times as much thyroid as the above is necessary to give a distinct test for iodin, especially when the thyroid is mixed with a large amount of other organic material; moreover, it is doubtful if it is possible to determine, by any chemical method at present known, whether iodin found in dry protein matter is present in the form of normal iodothyreoglobulin, whereas it is possible to distinguish sharply by the physiologic test between the iodized thyroid protein and artificially iodized proteins. Large amounts of other (non-toxic) substances do not interfere with the physiologic test; thus one milligram of the dried thyroid added to 40 gm. of cracker dust, or several grams of sugar or casein or blood was readily detected. Although I have found a few other substances which give this test, hundreds of times as much are required as of thyroid. (These results will be published shortly in a bulletin of the Hygienic Laboratory.)

It seemed probable that this test would throw light on the question whether there is an excess of thyroid secretion in the blood in exophthalmic goiter; at present the theory that there is a condition of hyperthyroidism in this disease rests entirely on clinical evidence, and this evidence is considered insufficient by many. Although I am able to report at present on but one case, it seems desirable, in view of the widespread interest in this disease, to record my results. Another reason for making this communication at present is the hope that it may lead physicians and pathologists to send me blood for further study.[2]

The blood on which the following tests were made was kindly sent to me by Dr. W. G. MacCallum, to whom I wish to express my thanks; it was obtained

*Acetonitrile is methyl cyanid (CH_3CN), a volatile liquid miscible with water. The name is given because it can be made to react with water to form acetic acid (CH_3COOH). In the system, however, this reaction appears not to occur, but by oxidation hydrocyanic acid is slowly liberated, by which poisonous effects are produced.

1. Hunt: Journal of Biological Chemistry, 1905, i, 33.

2. At least an ounce of the fresh blood is desirable; after the middle of September it could be sent direct to the Hygienic Laboratory, 25th and E Streets, N.W., Washington, D. C. It is very probable that the blood dried in thin layers at a temperature not exceeding 50 C. would answer equally well.

from an autopsy on a woman who had exophthalmic goiter and also bronchopneumonia, a pyosalpinx and general peritonitis. It is possible that these other diseases had an influence on the tests, although this does not seem probable, for the test is very characteristic of thyroid.

SERIES I.

In this series white mice were fed 1 c.c. of the blood, mixed with cracker dust, daily for nine to ten days, and then their resistance to acetonitrile compared with that of mice which had received similar food with the exception of the blood. The results were as follows:

A.—MICE RECEIVING THE EXOPHTHALMIC GOITER BLOOD.

1. Mouse	recovered	from	0.43	mgr.	acetonitrile	per gm. body wt.
2. Mouse	recovered	from	0.44	mgr.	acetonitrile	per gm. body wt.
3. Mouse	recovered	from	0.45	mgr.	acetonitrile	per gm. body wt.
4. Mouse	died	from	0.48	mgr.	acetonitrile	per gm. body wt.
5. Mouse	died	from	0.55	mgr.	acetonitrile	per gm. body wt.

B.—CONTROLS.

1. Mouse	recovered	from	0.26	mgr.	acetonitrile	per gm. body wt.
2. Mouse	recovered	from	0.30	mgr.	acetonitrile	per gm. body wt.
3. Mouse	recovered	from	0.31	mgr.	acetonitrile	per gm. body wt.
4. Mouse	died	from	0.32	mgr.	acetonitrile	per gm. body wt.
5. Mouse	died	from	0.33	mgr.	acetonitrile	per gm. body wt.

Thus it required about one and one-half times as much acetonitrile to kill the mice which had received the exophthalmic goiter blood as it did for the controls. These experiments are obviously open to the criticism that the effects of feeding exophthalmic goiter blood should be compared with those of feeding normal blood and not simply cracker dust, and I would not have attached much importance to the above results were it not for the following facts: Many previous experiments had shown that the feeding of the blood of normal and thyroidectomized sheep, of normal beeves, of normal guinea-pigs, as well as the blood of guinea-pigs which were pregnant, or had received injections of diphtheria toxin or antitoxin, also the serum of normal horses and of horses immunized with tetanus toxin did not produce a similar effect when compared with crackers. It was very desirable, however, to compare the effects of the blood from the case of Grave's disease with those of normal human blood; the latter was not available for the first series of experiments, but, through the kindness of Dr. Truman Abbe, I secured sufficient human blood for the following series:

SERIES II.

A.—MICE RECEIVING THE EXOPHTHALMIC GOITER BLOOD.

1. Mouse	recovered	from	0.44	mgr.	acetonitrile	per gm. body wt.
2. Mouse	recovered	from	0.55	mgr.	acetonitrile	per gm. body wt.
3. Mouse	recovered	from	0.65	mgr.	acetonitrile	per gm. body wt.
4. Mouse	recovered	from	0.70	mgr.	acetonitrile	per gm. body wt.
5. Mouse	died	from	0.75	mgr.	acetonitrile	per gm. body wt.

B.—MICE RECEIVING NORMAL BLOOD.

1. Mouse	recovered	from	0.35	mgr.	acetonitrile	per gm. body wt.
2. Mouse	recovered	from	0.37	mgr.	acetonitrile	per gm. body wt.
3. Mouse	died	from	0.38	mgr.	acetonitrile	per gm. body wt.
4. Mouse	died	from	0.39	mgr.	acetonitrile	per gm. body wt.
5. Mouse	died	from	0.40	mgr.	acetonitrile	per gm. body wt.

C.—MICE RECEIVING CRACKERS ALONE.

1. Mouse	recovered	from	0.32	mgr.	acetonitrile	per gm. body wt.
2. Mouse	recovered	from	0.37	mgr.	acetonitrile	per gm. body wt.
3. Mouse	recovered	from	0.38	mgr.	acetonitrile	per gm. body wt.
4. Mouse	died	from	0.39	mgr.	acetonitrile	per gm. body wt.
5. Mouse	died	from	0.40	mgr.	acetonitrile	per gm. body wt.
6. Mouse	died	from	0.40	mgr.	acetonitrile	per gm. body wt.

Thus it required nearly twice as much acetonitrile to kill the mice which had received the exophthalmic goiter blood as it did those which had received normal blood or simply crackers. The fact that the normal blood had no effect (when compared with crackers) shows that the results of the first series of experiments may also be accepted as evidence that the blood of exophthalmic goiter contains thyroid secretion.

It will be noticed that the fatal dose of the nitrile, both for the control mice and for the mice fed on blood, is larger in the second than in the first series. The two series of experiments were performed on different lots of mice and, as I have shown elsewhere,[3] different lots of mice frequently show such variations in resistance to this poison; this seems to depend largely on differences in age, but more differences in the food which the mice have received. The results with any one series of mice which are of about the same age and have been kept under identical conditions are remarkably uniform, as is evident from the above experiments and as I have observed in many other series.

The degree of protection to the nitrile produced by the exophthalmic goiter blood is about the same as that caused by the feeding of 0.05 to 0.1 mgr. of dried sheep thyroid; that is, 1 c.c. of this blood apparently contains about as much thyroid secretion as is represented by these amounts of thyroid.

It may be added that Dr. Seidell could obtain no evidence of iodin in 150 c.c. of this blood; but the iodin which would be contained in this amount of blood (as estimated by the physiologic tests) would not exceed 0.03 mgr., an amount too small to be ordinarily detected by chemical methods when mixed with a very large amount of protein.

I have further found that very large amounts of thyroid may be fed to guinea-pigs and yet thyroid could not be detected in the blood. This suggests the thought that perhaps there is not only an increased production of thyroid secretion in exophthalmic goiter, but also a diminished power on the part of the body to destroy the secretion; this may account for the small number of cases reported in which thyroid feeding has led to a condition strictly comparable to that of exophthalmic goiter.

It is believed that this line of investigation will throw light on several problems connected with the thyroid gland.

The above physiologic test is also being used to determine if certain of the "antithyroid Preparations"[4] neutralize or hasten the elimination of thyroid. Perhaps some experimental evidence can be obtained in this way as to the value of these preparations in the treatment of exophthalmic goiter; at present their use rests on somewhat unsatisfactory theoretical considerations and rather uncertain clinical results.[5]

3. Journal of Biologic Chemistry, I, 33; 1905; Bull. 33, of the Hygienic Laboratory, U. S. P. H. and M.-H. S., 1907.

4. See New and Non-Official Remedies (A. M. A.), 2d edition, p. 15, 1907.

5. The reaction is also being used to detect thyroid in certain secret "antifat" nostrums. From information obtained from physicians of large experience it seems that the use of thyroid (as such or in certain nostrums) by the laity for the treatment of obesity is accompanied by considerable danger. It is much to be desired that physicians will report cases of this kind coming under their observation.

Nature of Tetany.—Chvostek presents evidence to prove that tetany is the result of defective functioning of the parathyroid glands. The glands may be working apparently normally, but close to their functional limit, when some intercurrent factor, a sore throat, pregnancy, infectious process or the like may prove the last straw that breaks down the parathyroid functioning. He relates a number of examples of tetany occurring under various circumstances, in some cases coming on with menstruation each month, in others with an angina, etc., but the most conclusive testimony is the cases in which tetany regularly followed an injection of tuberculin. His study of the subject is published in the *Wien. klin. Wochschr.* for May 23, 1907, xx, page 625.

MYOPIA ASSOCIATED WITH OPACITIES OF THE CORNEA.*

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Although the association of myopia with opacities of the cornea, as well as with opacities of the crystalline and its envelopes, has been recognized for over a half century, little mention of this fact is found in modern ophthalmic literature. Among the authors of recent ophthalmic text-books in English, it is practically ignored.

The prevalence of corneal opacities in the cases of myopia studied in the older Continental schools and clinics is most striking to a modern American ophthalmologist. The statistics of Cohn[1] show a percentage of nearly 100 in school children. Among Arlt's[2] patients the association was found in 70 per cent. Additional published statistics are as follows: Chauvel,[3] 49.7 per cent.; Petersen,[4] 48 per cent., and Frenkel,[5] 38.5 per cent. Among other writers on this subject are Donders, Nicati,[6] Werth, Landolt,[7] Gelpke,[8] Roure,[9] Manguis,[10] Hess,[11] Fortin,[12] Garipuy,[13] de Lapersonne, and Widmark.[14]

Donders observed frequently the betterment of vision by concave lenses in cases of corneal opacity, but I can find no evidence to show that he recognized the production of a true axial myopia. The beneficent effect on vision was likely attributed to the increased accommodative effort and the consequent contraction of the pupil, diminishing the amount of diffuse illumination. However, Van Wyergarden,[15] a pupil of Donders, in 1854, records the case of a patient, blind since infancy in one eye with pronounced corneal opacities in the other, making it necessary for him to work at very close range, who gradually developed a high degree of myopia. He also mentions a man of 42, who improved his vision, dulled by corneal opacities, first by a stenopeic slit, and finally by concave lenses.

Arlt[2] discussed the rôle of central corneal and lenticular opacities in his celebrated Hand Book. Arlt had an especial interest in this subject, as his own brother suffered corneal opacities in a hyperopic eye, following smallpox in infancy. At the age of 13, this eye became myopic, gradually increasing in ametropia during his student life until it developed a myopia of 1/6. The other eye remained hyperopic.

Several of the early writers attributed the myopia to the increased curve of the diseased cornea. von Graefe[16] recognized the existence of a true axial myopia in these cases, and, in common with Arlt, advanced as a reason the closeness to the eye with which objects were held in order to increase the size of the retinal images, thus supplementing their want of clearness. The later statistics of Petersen and Fortin, showing a large percentage of double myopia in cases of unilateral opacities, seemed to further confirm the theory of excessive convergence as the chief etiologic factor in the myopogenesis. As will be seen later, the observations of H. Frenkel and Widmark point strongly to the accommodative strain as the cause of the myopia. These observers cite many instances of unilateral myopia with unilateral opacities.

In his magnificent and classical study of the examination of the eyes of 10,060 school children, Cohn[1] found 211 children with corneal opacities following the so-called scrofulous affections. Nearly all were myopic, and in 91 there was well-developed posterior staphyloma. Twelve were not refracted. The statistics relative to the other cases are as follows:

51 had myopia of from 1.0 to 1.5 D.
57 had myopia of from 1.75 to 2.25 D.
40 had myopia of from 2.5 to 3.0 D.
26 had myopia of from 3.25 to 4.0 D.
16 had myopia of from 5.0 to 6.0 D.
6 had myopia of 7.0 D.
3 had myopia of 9.0 D.

In 1879, Nicati[6] found among the school children of Marseilles 15.5 per cent. with myopia; and of these a large number showed corneal opacities, pronounced astigmatism and lesions of the ocular fundus, diminishing visual acuity. In 1884, Landolt[7] called attention to the frequency with which corneal opacities are found associated with myopia.

In 1887, Petersen[4] found in the records of the Ophthalmic Clinic of Kiel reports of 186 cases of myopia with corneal opacities. In 120 cases the corneal lesions were bilateral; in 66, unilateral. Of the bilateral cases 76 (63.4 per cent.) showed double myopia, in 28 cases higher than 6.0 D. There were 8 cases of malignant myopia, and in 50 cases there was posterior staphyloma. Bilateral emmetropia was noted in 8 cases (6.7 per cent.), and bilateral hyperopia in 16 cases (15 per cent.). In 66 cases of unilateral corneal opacities reported by Petersen, myopia was found in both eyes in 22 (32 per cent.). In 9 of Petersen's cases the myopia was found only in the sound eye and in 2 only in the affected eye. There was double emmetropia 3 times and double hyperopia 13 times. In 1892, Chauvel[3] contributed an important statistical study showing conclusively that, besides astigmatism of the cornea, opacities of this membrane have a marked influence on the production of myopia. Of 349 cases examined in military service the opacities had appeared:

Between infancy and 5 years, 131 times.
Between 5 and 10 years, 60 times.
Between 15 and 20 years, 33 times.
During military service, 94 times.

In comparison the statistics of Fortin show the début of the corneal lesions in 23 cases befofe 20 years and in 12 cases after this age.

In 1893, Manguis[10] reported 180 cases of unilateral myopia, in 27 of which there were corneal opacities in the myopic eye. He attributed the myopia to ciliary spasm arising from reflex irritation of the corneal inflammation rather than to the use of the eyes at very close range. In 1896, Roure[9] cites several instances in which

*Read in the Section on Ophthalmology of the American Medical Association at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Untersuchungen der Augen von 10,060 Schulkindern, Leipzig, 1867, 156.
2. Die Krankheiten der Augen, Prag, 1855, i, 260; iii, 217, 242.
3. Etudes ophthalmologiques. Recueil d'ophthalmol., 1892, 586; 1893, 211.
4. Ueber Hornhautflecke als Ursache der Myopia und Anisometropia, Kiel, 1887.
5. Sur les Rapports de la Myopie avec les Tales de la Cornée, Annal. d'ocul., Paris, 1904, cxxxii, 174.
6. Gaz. hebdom. de Méd. et Chir., 1879, 605.
7. Arch. d'ophthal., 1884, 1.
8. Die Augen d. Elementarschüler z. Karlsruhe, Tübingen, 1891.
9. Myopie, Cataractes centrales et Leucomes centraux, Annal. d'ocul., Paris, 1896, cxiii, 393.
10. Contribution à l'étude de la Myopie monolaterale. Thèse de Paris, 1893, 94.
11. Handbuch d. g. Augenheilk., 1902, ii, 338.
12. De la Myopie acquise dans l. Lesions cicatricelles de la Cornée, Paris, 1902.
13. Du Rapport d. Tales de la Cornée avec la Myopie, Toulouse, 1903.
14. Contribution to the Etiology of Myopia, British Med. Jour., 1902, ii, 1345.
15. Arch. f. ophthalmol., 1854, 251.
16. Arch. f. ophthalmol., 1854, 298.

concave lenses markedly improved the vision of persons with central corneal opacities not completely obscuring the whole pupillary area.

Inspired by de Lapersonne, Fortin,[12] in 1902, presented a most comprehensive statistical study of 54 cases, in 26 of which the opacities were bilateral. Of these 16 showed myopia in both eyes (62 per cent.). In 28 instances of unilateral opacities there were 17 cases of double myopia (60 per cent.). The myopia appeared only on the sound side twice, and on the affected side 4 times. There was a total of 83 per cent. of myopia in the 28 cases of unilateral opacities studied, in comparison with a total of 40 per cent. in the earlier statistics of Petersen. In the second edition of the Graefe-Saemisch Handbuch, Hess[11] discusses the manner in which corneal and stationary lenticular opacities cause myopia, attributing it to the necessary bringing of near objects close to the eyes.

From notes of 6,000 cases in private practice, Widmark[14] made a study of 100 cases of anisometropia in which there was either myopia in one eye only of at least 2.0 D., or myopia in both eyes but with a difference of 2.0 D. While the purpose of the paper is to refute the prominence formerly given to excessive convergence in myopogenesis and to give proper credit to anisometropia and corneal astigmatism as etiologic factors, it contains much data distinctly relevant to the discussion of the rôle of corneal opacities in this connection. Widmark contends that when corneal defects occur in both eyes they are predisposing causes to double myopia, not on account of the excessive convergence required, but because both eyes are strained in the effort of near vision. On the other hand, he affirms that when the cornea of but one eye is affected its fellow only becomes myopic, because it assumes all the strain of close work. He believes that the affected eye may become amblyopic, divergent or convergent, or may even be enucleated without in any way influencing the course of the myopia in its sound fellow. In support of this contention he cites several interesting illustrative cases, in 4 of which unilateral opacities caused myopia on the sound side only. This is confirmative of the belief shared by Arlt, Werth and Petersen, and which is disputed by the findings of Fortin and Frenkel and, in a measure, by the statistics that I offer. Widmark argues that the chief cause of myopia is seeing "in a limited sense"—the perception in the yellow spot and processes connected therewith at the posterior pole of the eye. Any extra effort at discerning close objects quickly following on each other—as, for instance, in reading and writing—may lead to hyperemia in the ocular fundus, which some writers assume as the predisposing cause of the characteristic myopic changes at the posterior pole. In addition the accumulation of fatigue products may also have a deleterious influence on the intraocular membranes, the continued hyperemia leading to softening of the tissues, which yield to the intraocular pressure. The practical lesson from these observations is the great necessity of facilitating the work of the retina and preventing ocular fatigue by correction of the astigmatism, anisometropia, etc., adequate illumination, properly printed books, etc. Other hygienic measures are relatively unimportant in controlling myopogenesis in school children.

By far the most exhaustive bibliographic and clinical study of this subject is that by H. Frenkel,[5] of Toulouse, supplemented by the ophthalmometric measurements of his associate, E. Garipuy.[13] The cases were selected from 1,350 ophthalmic patients. Among the patients with corneal opacities there were found:

10 men and 20 women with myopia.
4 men and 4 women with emmetropia.
4 men and 5 women with hyperopia.

Of 22 patients with bilateral corneal opacities there were 14 with double myopia (63.6 per cent.), proportionately identical with the findings of Petersen and Fortin. There was unilateral myopia twice, and in 3 cases in one eye determination of the refraction was impossible. Of the 22 cases there were 19 instances of myopia, either unilateral or bilateral (86.4 per cent.). In one case there was practical emmetropia and in two cases hyperopia. In the 25 cases of unilateral opacity Frenkel found a preponderance of myopia on the affected side 11 times. In 2 cases the myopia was on the sound side. To summarize, there were 13 cases of myopia, 5 cases of emmetropia, 2 cases of double hyperopia, 3 cases of hyperopia on the affected side, and 2 cases of hyperopia on the sound side.

Illustrative of the tendency to high myopia, Frenkel found myopia above 6.0 D. in 16 of the 78 patients with corneal opacities—a proportion of 20.5 per cent., as against 6.45 per cent. in all the cases of myopia (about 1,000) observed by Cohn among 15,490 patients from 1866 to 1886 (reported by Schlesinger[17]). This marked frequency of high myopia may be attributed to the greater liability to affection of the intraocular membranes of the posterior segment of the eyeball after serious disease of the anterior tunics—a fact established by the observations of Panas[18] and de Lapersonne. Frenkel also significantly mentions that he has found corrected visual acuity relatively better in the cases of hyperopia with corneal opacities than in those of myopia. It is considered justifiable to believe that certain lesions of the cornea and anterior segment of the eyeball have associated with them a disturbance at the posterior pole, which, by an ill-defined, but nevertheless real, process, results in a chorioretinitis which becomes a preponderating factor in the pathology of progressive myopia.

It has also been suggested in this connection that irritation of the ciliary body following corneal inflammation produces hypersecretion and disturbance of the equilibrium between the ocular membranes and intraocular tension, resulting in a veritable anterior staphyloma, such as is seen in some cases of congenital hydrophthalmos. Fortin claims to have observed several cases of myopia in which there was an exaggeration of the corneal curve resembling that of true keratoconus. The ophthalmometric measurements in Frenkel's cases, however, did not show any significant difference between the curve of the central corneal meridian in the myopic cases with corneal opacities and that of the cases of hyperopia or emmetropia with similar opacities.

A careful study of the relative literature, as well as personal observation, shows that in these cases the myopia may appear either in the sound or diseased eye, or in both eyes. Frenkel states that in the cases of unilateral opacity examined by him the myopia was most frequently unilateral, but not always in the affected eye. Moreover, in no instance of unilateral opacity with double myopia was the defect equal in the two eyes and imputable in both eyes to the corneal lesions. He believes that if the opacities of the affected eye do not markedly interfere with useful vision at close range this eye speedily become

17. Beitrage z. prak. Augenheilk., 1900, xiv, 127.
18. Lecons de clinique ophthalmol. Recueilies par Castan, Paris, 1890, 157.

myopic. On the other hand, if the opacities greatly obscure vision, preventing satisfactory use of the affected eye, the myopia develops in the sound eye. He calls attention to the fact that, in addition to irregular astigmatism, corneal opacities produce a definitely measurable astigmatism, which averages 1.5 D. to 2.0 D., and which is a factor in the myopogenesis. This conclusion is the result of careful ophthalmometric measurements in cases of unilateral and bilateral corneal opacities with and without associated myopia.

In 11 cases of high myopia, measurement of the anterior corneal curve showed an average astigmatism of 1.7 D. in the right eye and 1.6 D. in the left. In the cases of bilateral corneal opacities with myopia the average astigmatism in the right eye was 1.7 D.; in the left eye, 2.0 D. In the cases of unilateral opacity the average astigmatism in the affected eye was 1.6 D.; in the sound eye, 0.8 D. In the cases of opacities with emmetropia, the astigmatism was predominant in the eye with the opacities. In the cases with hyperopia, the average astigmatism in the affected eye was 1.3 D.; in the sound eye, 0.2 D.

I have selected from my private case records for the last ten years 28 instances of corneal opacities associated with myopia; of these, 13 were males and 15 females, ranging in age from 10 to 60 years. In 22 cases the opacities were unilateral, in 6 bilateral. In the examination of my records, no myopia of less than 2.0 D. has been considered, and all cases of suspected lenticular myopia have been rejected. No attempt has been made to show the relative frequency of corneal opacities in general ophthalmic practice, and the refractive condition of all patients with corneal opacities is not considered. It is evident that there would be a great discrepancy between the statistics of an American private ophthalmic practice and a Continental clinic. The object of the paper is solely to set forth the rôle of corneal opacities in myopogenesis and to present interesting collateral and relative data. Of the 22 unilateral cases of opacity the myopia was double in 12 and single in 10. The myopia developed only in the sound eye in 5 cases and only in the affected side in 5. Of the 6 cases of bilateral opacities, in 2 the myopia was unilateral. In one patient with congenital bilateral central posterior capsular cataracts, the myopia was unilateral and the corrected visual acuity was equal and almost normal in the two eyes. In one case of bilateral opacities the myopia was unilateral and in the eye with least opacity. In one case of double opacities, the myopia was bilateral and greatest in the eye with the best vision. Of the 16 cases of bilateral myopia there was a difference in the two eyes of more than 3 D. in 6 cases.

Unfortunately the opportunity to observe continuously the development of the myopia has been limited, but in two cases repeated examinations extending over a decade are of sufficient interest to warrant recording. In 1897 the patient, a girl of ten years, came to my office complaining of poor vision in the right eye, which was found to contain several punctate corneal opacities. There was a history of repeated attacks of "sore eyes" and the conjunctiva showed marked evidence of argyrosis. The refraction under atropin was:

R.—S. 2.00—C.1.00 ax. 180° = 6/12 V.
L.—S. 0.25—C. 0.37 ax. 30° = 6/5 V.

Within the next two years there were several slight attacks of phlyctenular conjunctivitis in the right eye which always yielded promptly to the ordinary treatment. In 1902 the patient complained of failing vision in the left eye. Under cycloplegia I found:

R.—S. 2.50—C. 1.00 ax. 180° = 6/7½.
L.—S. 2.00—C. 0.62 ax. 180° = 6/5.

The opacities gradually disappeared until the examination of the refraction under atropin in 1907 showed perfect visual acuity in both eyes, with the following refraction:

R.—S. 3.00—C. 1.25 ax. 180° = 6/5.
L.—S. 2.50—C. 0.50 ax. 180° = 6/5.

In this case, at first appearance, the myopia was distinctly unilateral and in the affected eye, but during the course of school work, notwithstanding repeated refractions and the rigid use of correcting lenses, an almost equal degree of myopia developed in the sound eye. Fortunately the corneal haze gradually disappeared in the right eye until the corrected visual acuity was ultimately practically as good as that of the left eye.

Another interesting case was in a boy of 10, who first consulted me nine years ago. There was a faint central corneal opacity in the left eye following a severe keratitis in early childhood. Retinoscopic and ophthalmometric measurements showed 1.75 D. of hyperopic astigmatism at the vertical axis. The opacity was sufficiently dense and the cornea irregular in curvature to prevent vision better than 6/100, even with the correcting cylindric lens. The sound right eye was myopic to the extent of 1.5 D., but with the correcting lens visual acuity was perfect. During the last nine years the myopia of the sound right eye has gradually increased to 4.0 D., with no diminution of corrected visual acuity. The opacity in the left cornea has gradually diminished, allowing an increase of corrected visual acuity to 6/30, without, however, any noticeable change in the refraction.

CONCLUSIONS.

1. Central corneal opacities are a much more frequent cause of myopia than would be inferred from an examination of general ophthalmic literature, particularly the English and American text-books and periodicals. According to recent reliable Continental statistics, in at least one-third of the cases in which they are present, central corneal opacities produce myopia, although this average is likely higher than that found in American ophthalmic practice.

2. The myopia is axial and not dependent on alteration of the corneal curve. Ophthalmometric examinations do not show any significant differences between the corneal curvature of myopic eyes with corneal opacities and similar eyes in which the refraction is emmetropic or hyperopic.

3. The mechanism of the production of the myopia is analogous to that of the common form following astigmatism, anisometropia, etc., with the added predisposing factor of weakened ocular tunics by previous inflammation.

4. The association of disturbance of the chorioid and retina of the posterior segment of the eyeball with inflammations of the anterior membranes is an important element in further reducing visual acuity in these cases. For a similar reason extensive fundus lesions are common, and the myopia is more likely to become progressive than ordinary.

5. Either unilateral or bilateral opacities may produce myopia, and the myopia produced may be unilateral or bilateral.

6. In the cases of unilateral opacity the myopia may be single or double. If in such cases the myopia is uni-

lateral it may appear either on the sound or the affected side, but no definite rule can be established in this connection. However, it is likely that when one eye is used almost exclusively for close vision it will become myopic first or to a greater extent than its fellow.

7. In cases of bilateral corneal opacities the myopia is generally bilateral. When there is a marked difference in the amount of defect in the two eyes the greatest myopia is often found in the eye with the least corrected visual acuity. When the myopia is unilateral it often occurs in the eye with the least opacity.

8. The cases of unilateral myopia are strongly suggestive of the importance of ciliary strain rather than excessive convergence in myopogenesis.

9. In view of the strong possibility of resultant myopia, all cases of corneal disease, particularly the phlyctenular affections of childhood, should receive prompt and continuous treatment, and prophylactic measures should be rigidly followed to prevent recurrences. After the subsidence of the inflammation energetic treatment should be adopted to clear up the opacities.

10. Of greatest importance in the prevention of the subsequent myopia is careful and repeated refraction of both eyes under artificial cycloplegia, employing both objective and subjective methods, and the constant use of correcting lenses.

11. All errors in ocular, personal and domestic hygiene that encourage the development of myopia should be corrected, and the patient should be kept in the best physical condition and most salutary environment.

Clinical Notes

THE GYMNASIUM IN THE CAMPAIGN AGAINST DISEASE.

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The education of the masses in matters of personal and general hygiene gives the greatest promise of success in our modern campaign against disease. The category of preventable diseases is large and their prevention is generally easily possible under proper personal and general hygienic regulations. In fact, it is certain that a reasonable hygienic regimen imposed for a long period of time and imposed on all individuals in any given region will result in the eradication in that region of certain diseases that are now widely prevalent. It is with a full realization of this fact and of the uselessness of much of our present mortality that prophylactic medicine has of late years become so active. Our textbooks on medicine reiterate again and again the necessity for careful hygienic regulation in the prophylactic measures laid down for each disease. Physicians are advising their patients more and more concerning the relation of daily hygiene to health. Boards of health are vitally interested in the proper hygienic regulation of the conditions under their supervision, and these several influences are striving to secure the intelligent cooperation of the masses by teaching them the significance of hygiene. Societies are formed, literature is disseminated, lectures are given and stereopticon illustrative views are shown in public places in order to educate the people. Legislative enactment with an absolute control over a large number of disease-breeding conditions is bound to follow popular enlightenment. In this educative campaign, as has been noted, several forces are now active. More should and will be added. This article is written in order to point out another which I believe would be a powerful ally. Our higher institutions of learning exert a very strong and widespread influence in all matters in which they are concerned. The students in attendance are drawn from the four corners of the earth, and after several years of academic experience are scattered again to become active participants in all phases of life. If each student after leaving college would become an active element in the campaign against disease the educative work done in any given academic community would be efficiently and enormously multiplied. In the modern high school, college and university there is a department in which personal and general hygiene logically belongs. Physical instruction is nothing less than personal hygiene, and gymnasium work is applied hygiene. Nowhere in an academic community is there an easier opportunity to meet large numbers of students than in the gymnasium. Nowhere else is instruction in the simple laws of hygiene more logically placed. Nowhere else than on the gymnasium floor before a class of men do you find the "psychologic moment" for making appropriate statements that will be remembered. Five minutes before each drill—not a lecture—and in one year or two years enough will have been said and remembered to make the gymnasium a powerful force in the campaign against disease.

ESBACH'S ALBUMIN TEST COMPLICATED BY KREATININ.

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Incomplete precipitation of albumin in Esbach's test is mentioned. One reason for this partial precipitation was observed in a rapidly fatal case of typhoid. A small amount of albumin was constantly present which gave a small precipitate in the Esbach's tube, but the fluid in the tube remained cloudy for days. With the assistance of Dr. W. Koch, it was found that a very large amount of kreatinin was present. Kreatinin gives with picric acid, in an acid solution (as citric acid), a yellow precipitate which remains in suspension for a long period of time. Perhaps this reaction explains the incomplete precipitation in other cases.

A CASE OF ACUTE APPENDICITIS,

FOLLOWED BY EMBOLISM OR THROMBOSIS OF LEFT EXTERNAL ILIAC ARTERY, WITH DRY GANGRENE OF LEFT FOOT AND LEG.

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History.—Sept. 17, 1906, Mr. G., aged 57, a large, fat, previously active and supposedly healthy man, was attacked with pain in the abdomen. He went to his store on the morning of September 18, but was unable to remain the whole day, and I was summoned to see him in the evening. He was suffering considerable pain in the abdomen, which was rigid in the appendiceal region, with marked tenderness on pressure over appendix. There was fever and acceleration of pulse to a moderate degree. This man had enjoyed exceptionally good

health, was not addicted to alcohol, but used tobacco to a moderate extent. He was a merchant and was able to live comfortably and without undue strain or exposure of any kind. His arteries were not sclerotic. Two years previously he had an attack of facial erysipelas of a severe type, from which he made a good recovery, and had had no sickness since that time.

September 19 the symptoms were about the same as on the previous day; the temperature was about 103 and pulse quickened but good. There was some distension of the abdomen, with pain, tenderness and rigidity of the right lower quadrant, evidently due to acute appendicitis. Blood count: Leucocytes 11,000. The urine contained many granular casts.

Treatment.—An ice bag was applied to the abdomen. No food was given by mouth and sufficient anodynes were given to relieve pain. Although there was no doubt in my mind that he was suffering with acute appendicitis, I refrained from operating on account of the condition of the urine, the patient's obesity, the previous attack of erysipelas, the low leucocyte count, and objections on the part of the patient and his wife.

Course of the Disease.—His symptoms rapidly subsided, and September 23, six days from the inception of the attack, he appeared convalescent. At 11 a. m. on that date he was free from pain, with diminished tenderness and rigidity, and felt very comfortable. Two hours later he was suddenly taken with pain in the left leg below the knee. The leg became numb, cold, white, and without appreciable pulsation in any accessible artery. No pulsation could be felt in the femoral or external iliac arteries. I do not remember having listened to the heart previous to this occurrence; afterward, however, I found a slight soft endocardial murmur, but there were absolutely no signs of any acute or serious heart complication. The foot became discolored, dark, cold, and of almost horny hardness, and this condition extended irregularly almost to the knee. Above the knee the skin continued warm. In a month an irregular line of demarcation had formed below the knee. The urine cleared up, the appendiceal symptoms disappeared, and the heart was performing its functions well. The patient was seen by the late Dr. I. E. Atkinson and by Dr. W. S. Thayer, and the condition of the left leg was recognized to be due either to an embolus, or to a thrombosis caused by a septic endarteritis of the left external iliac artery. He was removed to the University Hospital, where an amputation was done just above the knee, under ether anesthesia. The man made a good recovery, and has remained well until this time.

Among the complications of appendicitis, femoral phlebitis and thrombosis are not very rare and may occur on either the right or left side, or, as in a case recently under my care, on both sides, but I have not seen any account of a gangrene due to interruption of the arterial blood supply as a consequence of appendiceal disease. It is difficult to understand how a septic infection of the left external iliac artery could result from an appendicitis, apparently of mild type, and the question arises whether this gangrene was a consequence of the appendicitis or merely a coincidence. In the absence of any previous symptoms suggesting disturbance of the heart, and from the fact that there had been no cardiac distress before this attack, and has been none since, notwithstanding a slight endocardial bruit, I do not think it probable that an embolus large enough to block completely the external iliac artery could have been washed from the cardiac valves and lodged in this situation. I am of the opinion, therefore, that, from some cause, a point of least resistance was found in this artery and that organisms were conveyed by the blood stream to this point and there set up an endarteritis with thrombosis of this vessel, completely occluding its lumen.

The clinical symptoms, however, were strongly suggestive of an embolism, as they came on suddenly without any premonition. In some cases of typhoid fever endarteritis of the femoral vessels has been observed, and this condition may have had a similar pathology.

Was the gangrene in this case due to the appendicitis, or would it have occurred spontaneously? I do not know, but I believe that it was the result of the appendicitis. Would the early removal of the appendix have prevented the gangrene? This is possible, but I am glad it did not follow an operation, as it certainly would have been attributed to the operation rather than to the disease. It seems to me that the case is of sufficient interest to be put on record, and I shall be pleased to know of any similar cases that may have been observed.

A CASE OF SCARLATINA WITH COMPLICATIONS.

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HIGHLAND PARK, ILL.

Scarlatinal arthritis, although a somewhat common complication is rarely so extensive as in the following case:

History.—June 24, 1906, I was called to see the patient, a girl, aged 15, well-developed and weighing about 125 pounds. She had a severe angina and headache with a temperature of 102 F., following a severe chill. The pulse was 118. The following morning her temperature was 101.3 F., pulse 114, and an exanthem was appearing on her chest. The tongue was typical of scarlet fever. For the first fifteen days the temperature varied between 102.6 F. and 105 F., after which it fell below 100 F., and gradually reached normal. On the fifth day albuminuria appeared and persisted during the period of high temperature. On the sixth day arthritis appeared, gradually involving all the joints, and disappeared by degrees. There was no suppuration, but there was an effusion in all the joints and the patient was unable to move the head owing to the severe pain such movement caused. From July 2 to July 10 the patient was delirious or in a state of coma at all times. The bowel movements and the voiding of urine were involuntary. The patient became deaf and was also troubled with amblyopia. Both these symptoms gradually disappeared.

Treatment.—The diet was milk until July 19, when eggnog was added, followed by chicken broth, mutton broth, etc. The temperature was reduced by sponging. Liquor potassii acetatis and spiritus etheris nitrosi were given as diuretics. For the relief of pain and action on the arthritis sodium bicarbonate and sodium salicylate—making a fresh solution of sodium salicylate—were administered internally. Externally the affected joints were wrapped in cotton after applying unguentum Credé. Later the patient was given tincture of chlorid of iron for the resulting anemia.

Result.—The patient was under observation until September 19, and at no time could I detect any heart lesion. I saw the patient July 2, 1907, and she appeared to be in the best of health, not being troubled with any sequelæ whatever.

RAPID RECOVERY FROM SYNCOPE.

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PHILADELPHIA.

For overcomming cerebral anemia it is the common practice to lower the head, according to the accepted theory, to permit the blood to reach the brain without working against gravity. To do this the patient is made to lie supine. In fact, the unconsciousness and fall of a fainting person is a natural provision to bring about the same end. In the absence of medicinal restoratives the treatment of unconsciousness caused by mental excitement or emotion, slight pain, excessive heat or

other nervous causes is deficient in that the end reaction, cerebral hyperemia, is usually not sufficiently sought.

In case of fainting from being in overcrowded rooms, from exciting surroundings, from slight concussion or other pain or discomfort, the most rapid relief comes from forcing the blood out of the abdomen, where it has largely collected. This is of more avail than to elevate or to compress the extremities, and should be practiced except where contraindicted by some abdominal condition. A patient found unconscious from an ordinary syncopal attack can be most rapidly resuscitated by laying him in supination with pressure on the abdomen by the hand or, better, by the flexed thighs. This much is commonly known, but the fact that better and more rapid results can be obtained by a slight variation does not seem to be known or the method adopted.

The patient should be made to sit on a chair or other high object and lean forward with as much flexion of the body as possible, even to bring the face between the knees. By this posture the head is brought to the level of the body, but what is of more importance, the flexed thighs pressing on the abdomen force the blood from the mesenteric vessels into the brain. If the patient cannot or will not voluntarily flex the body sufficiently he should be assisted by being pushed down and held in the position until long after all objectionable sensations have ceased. This leaning posture often gives instant relief or is a valuable prophylaxis for an oncoming syncopal attack. During minor operations where anesthetics are not employed, or during slight surgical dressings, by holding the patient in the flexed sitting position the pain, nausea, vertigo and discomfort may very largely be prevented. It is an especially valuable procedure for dispensary or office work, being convenient, rapid and effective.

5038 Pine Street.

THE USE OF THYROID EXTRACT IN HENOCH'S PURPURA.

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MACKAY, IDAHO.

History.—David P., white, American, was brought to me July 6, 1906. The following history was obtained from his father: He had always been a healthy boy, and, with the exception of measles at the age of 5, he had no illness until the present illness. During February, 1906, the attack began. He was taken to a physician, who pronounced it eczema. His treatment did not help the child. He had pains in all the joints, but most marked in the knees. Attacks of pain in the abdomen, especially in the left hypogastrium. Vomiting had occurred twice. The bowels were somewhat constipated.

Examination.—This showed a well-nourished boy of fairly good size for his age. His eyes were clear and his tongue slightly coated. No abdominal tenderness, but slight tympanites. Temperature normal, pulse 80. There was an eruption, petechial in character, covering most of the legs and thighs, but most marked around the knees. There was a fairly well-marked edema of the legs, extending two inches above the knees. The knee joints were rather tender on pressure and manipulation. The urine was normal in every respect. Examination of the blood showed 60 per cent. hemoglobin. The cells were not counted, owing to lack of apparatus. As Rocky Mountain spotted fever was prevalent at that time and his symptoms much resembled those of that disease, I believed the eruption he had in February to be a different trouble and diagnosed the disease spotted fever.

Treatment.—I put him on the treatment that had given me good results in that disease, viz., sodium salicylate and a diuretic, usually potassium citrate. I might add here that the treatment by quinin and ferric chlorid advocated by some has never given good results in my hands. My experience coincides with that of Major C. F. Kiefer.[1] Later I used arsenic with the best results. This relieved the joint pains and the edema, but the eruption remained unchanged. July 13 I added arsenic in the form of Fowler's solution and the peptonate of iron, on account of the anemia present. Appropriate diet and general measures also were used. On July 25 I saw him again. He was much improved generally, but the eruption was just the same. It was then that I changed my mind as to the diagnosis. Following Osler's suggestion, the arsenic was pushed to the limit. On August 24 the eruption was still unchanged. A blood examination showed 70 per cent. of hemoglobin. Each future examination showed improvement, the last one made being 85 per cent. Various drugs recommended for purpura were faithfully tried, but to no avail. Even the calcium salts were of little or no value. Considering the effect on general metabolism, I decided to try thyroid extract. So one grain was given morning and evening. In two weeks the eruption was entirely gone. The dose was then reduced to once a day, and kept up one month longer, when it was discontinued. I did not see the case for six weeks, when he returned sufferin; from a relapse. A second trial of the extract again gave speedy relief. My advice to discontinue its use gradually was not followed and a second relapse followed. This also was soon controlled by the extract. The dose was then reduced to once a day, once in two days, and so on, with directions to increase again if there were any suggestion of any return of the eruption. At the last report there had been no further return.

Whether or not this is a case much out of the ordinary I am not prepared to say. There were none of the usual manifestations of deficient thyroid function. Nor could any abnormality be found in the gland itself. Although I neglected to estimate the time required for coagulation of the blood, yet I noticed that the punctures made for the blood examinations readily stopped bleeding.

Symptoms besides those mentioned that sometimes occur in Henoch's purpura were noticeable by their absence. No hemorrhages from the mucous membranes were present at any time during the attack. The eruption was petechial throughout, no suggestion of an erythema multiforme being present. The heart remained absolutely normal, not even a hemic murmur being present when the anemia was most marked.

Whether thyroid extract will prove to be a specific for all cases of Henoch's purpura or for other forms of purpura remains to be seen. But the remarkable results in this one case warrant a further trial. So far as I know, this is the first report of the use of thyroid extract in this class of disorders.[2]

1. The Journal A. M. A., April 6, 1907, 1154.
2. Note.—July, 1907. Since this was written there has appeared the article by J. T. Rugh in Annals of Surgery, May, in which he used thyroid extract with success in a hemophilic knee joint.

Blood Examination for the Early Detection of Lead Poisoning.—Frey (*Deutsche medizinische Wochenschrift*, Feb. 7, 1907), finding that the presence of lead in the urine is not constant, suggests an examination of the blood in order to detect the red cells with basophile granules, described by Grawitz in 1899. These, it is true, are not pathognomonic of lead poisoning, since they are seen also in cancer, in pernicious anemia, and in certain septicemias. But in a mechanic free from these diseases, and handling the lead, the presence of these basophile granules becomes of great importance. The observations of Frey show that by examination of the blood we may find the first evidence of saturnine intoxication. The technic is simple. It is only necessary, after drying and fixing with absolute alcohol, to color the blood preparation with Loeffler's blue stain, in order to show, in a certain number of red corpuscles, the granules colored blue.—*New York Med. Jour.*, July 13, 1907.

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SATURDAY, JULY 20, 1907.

THE MOST IMPORTANT FACTOR IN INFANT MORTALITY.

We have reached the season when infant mortality is the most serious problem with which the physician has to deal. We hear much of milk and its dangers, of crowded tenements and long-continued heat, of uncleanly quarters and garbage accumulation, but there is one factor in modern infant mortality of which we shall hear comparatively little, and yet which is of greater importance than any or perhaps even than all of these. In spite of this it is the element whose effect on the problem can be more directly traced than any other. It is the one of all the factors which, instead of being on the decrease in influence, as are practically all of the others, owing to the ameliorating hygienic effect of modern science and the spread of modern methods of sanitation, is decidedly on the increase, and threatens in the near future to be, if possible, even more pernicious than it is at the present time. This is the failure of mothers to nurse their children. Some women, it must be at once admitted, are not physically capable of nursing their children, either because they are not capable of supplying sufficient nourishment of the proper kind to the infant, or because the drain on their own nutritional supply would be too great for their health. It is freely conceded, however, that most women can nurse their children, but do not.

There is no substitute for mother's milk. No modification of cow's milk, no matter how carefully or scientifically made, even approaches mother's milk for the healthy nutrition of infants. This is not alone true in general, but the truth becomes even more striking if special phases of the problem are considered. No two women give milk that is absolutely the same any more than their children are alike. The milk provided by Nature for each infant is, as a general rule, of the precise composition that is best suited for the particular nature of the child. This is not an absolute rule, but the exceptions to it only demonstrate that the rule surely exists. In the face of this, the statistics with regard to nursing mothers are little short of appalling. Censuses taken in Berlin every five years contain the report of the numbers of mothers who have been ascertained to nurse their own children. Of every thousand children born during the five years before 1890, 529 were nursed by their mothers. In the course of five years this number had decreased considerably, so that in 1895 only 446 children were maternally nursed. In 1900 there was a still further reduction and unfortunately in even greater proportion than for the preceding five years. Out of over five hundred there had been a reduction of 85 for a half decade ending in 1895, but out of 446 there had been a reduction of 114 in the five years before 1900. This is practically 25 per cent., while the ratio of reduction for the preceding five years had been only a little more than 16 per cent. The figures for 1905 are said to show an even greater decrease for the first five years of the twentieth century. This would mean that less than one among four mothers in Berlin, an average of less than one, now nurses her children.

German women are said to be more willing, as a rule, to nurse their children than those of most other nationalities. Of course, city women are much more ready to avoid this duty than are those who live in the country, but it is more than probable that the state of affairs found in Berlin is not worse than that which is developing at the present moment in our own large cities in this country. It is evident that, if the high death rate among so-called nursing children, that is, those who should be nursed, is to be reduced, the influence of this factor must be guarded against much more than it has been in the past. Physicians are probably more ready to find excuses for women for not nursing their children than was formerly the case, and this has had a widespread influence in strengthening the present fashion which proclaims it quite the thing for a woman not to nurse her own child. There would seem to be in this a serious duty of instruction as to maternal obligations, which the medical profession must take to heart, if the present unnatural tendency to give the infant over to the dangers of artificial feeding is not to be allowed to work even more harm in the future than it has in the past.

PRACTICAL SCIENTIFIC WORK.

The article in this week's issue by Dr. Reid Hunt, on the thyroid principle in the blood of exophthalmic goiter, forms a part of series of investigations by this indefatigable and successful experimenter, conducted under government auspices in the Hygienic Laboratory of the Public Health and Marine-Hospital Service. The work promises to be of unusual practical importance and Dr. Hunt and Surgeon-General Wyman deserve commendation for their efforts on behalf of scientific medicine. Let us hope that these investigations may be followed by others of like character and thus place our therapeutics on a firm basis of experimental knowledge.

Therapeutics can not rest on experiment alone; the conclusions from experiment must be confirmed by experience. Clinical experience is apt, however, to be wofully uncertain unless controlled by the exact tests formulated by experiment. We are familiar with the exactness and delicacy of chemical tests, but the work of

Hunt and others is proving that there are biologic tests that exceed in delicacy, while they rival in certainty the tests of the chemical laboratory and doubtless further experience will find ways of applying such tests to the living human body without doing harm.

The outcome of these experiments illustrates the practical possibilities of such a work. There is an unfortunate tendency to separate the scientific from the practical and to regard scientific work as lacking in practical value. Experience has shown, however, that scientific discoveries, which were at first deemed of theoretic interest only, become of great practical importance at a later stage in the progress of medicine. The first work on the action of acetonitrile may have seemed of no practical importance, as the drug is not used in medicine. The later work of Hunt on its antagonism by thyroid extract and on the relation of alcoholism to the tolerance of acetonitrile seemed to have largely a theoretic interest, but the present study has evident practical bearings. The ability to detect the thyroid secretion in the blood of patients with exophthalmic goiter promises to lead to a method of testing the value of the various agents proposed for the treatment of this disease and to provide a means of determining objectively the success of the treatment by showing the diminution of the causative agent in the blood.

It is unnecessary to dwell on the need for more such work in connection with the various problems of clinical medicine. A larger number of capable men are needed to attack these problems in an experimental way. Such men must be specialists and should be in close touch with the profession in general, that they may appreciate the relative importance of the problems they undertake to solve. In order to get such men the value of their work must be recognized and their efforts suitably rewarded. It is the duty of the practicing physician to keep himself informed regarding the progress of scientific work and to assist by furnishing specimens as is requested by Dr. Hunt. Further, the practical man who is well informed regarding the work that is being done may often assist by suggesting new phases and problems for investigation.

THE SPONTANEOUS HEALING OF CANCER.

At the meeting of the international conference for the investigation of cancer, in Heidelberg last year,[1] Czerny discussed, from his rich experience, the question of the healing or retrogression of cancers which have seemed to be inoperable. A hundred years ago the Society for the Investigation of Cancer, in London, propounded for consideration the question: Can cancer ever undergo a natural healing? At the present time it can scarcely be denied that the answer must be in the affirmative, in view of carefully reported cases in which cancers have disappeared after inadequate treatment or none at all; yet such cases are among the rarities of medical literature. Surely, if cancers do ever cease to grow, the reason for this cessation of malignant propensities should be the object of a most zealous search. Czerny recalls several instances in the literature in which persons with cancers too far advanced for complete removal have, to the surprise of all, improved greatly after palliative local procedures, and, in a few cases, have shown no recurrence of the growth and no development of metastases. He quotes, with evident approval, the statement of Lomar, that such a favorable outcome is much more likely to follow local treatment with the thermocautery or with chemical caustics than incomplete operations with the knife. Cases in which spontaneous healing has occurred without operative interference of any kind are much more rare, even, than these. Czerny recalls one case in which a patient with mammary carcinoma developed an erysipelatous infection in the wound of the second operation for recurrent growths, and who is now, twenty years later, free from all signs of the disease. He has also observed instances in which the microscope has shown that the line of incision for the removal of intestinal cancer has passed through cancerous tissue, and yet the patients have lived many years without recurrence of the growth. Among his cases of gastroenterostomy for inoperable cancer of the stomach have been many in which the growth decreased greatly in size after the operation, and an assistant was able to collect from the hospital records nine cases in which the patients have survived the operation over four years and are now in good health.

It is remarkable how differently operative interference affects malignant tumors. Often, especially with the slow-growing scirrhus cancer of the breast, it seems to fan a smoldering flame of malignancy into a fiery outburst of consuming growth; yet sometimes the operation seems to stimulate, not the cancer cells, but the protective mechanisms, whatever they may be, so that the retrogressive changes predominate over the proliferative, and the residue of the growth and its metastases disappear or remain quiescent for many years. Instructive cases have been observed in which persons have died from some unrelated affection several years after operation for cancer, and autopsy has revealed the presence in the internal organs and tissues of cancer nodules showing marked fibrotic changes with few visible cancer cells in the scar tissue. Evidently in these patients the metastases had formed before the operative removal of the primary growth, and after this event had lost their proliferative powers, and, gradually disintegrating, had been largely replaced by fibrous tissue. Undoubtedly such occurrences are not uncommon, both in patients showing unexpected recurrence several years after an apparently successful operation, and also in patients who have escaped recurrence, and in whom, therefore, the operator believes there could have been no deep metastasis at the time of operation.

1. Reported in the Ztschr. f. Krebsforschung, 1907, v. 27.

If we could explain the reason for this occasional loss of proliferative power in metastatic growths after removal of the primary cancer, we might acquire knowledge of great value to therapeutic progress. Lubarsch, in his address before the same convention,[2] recounts certain facts and theories that have a bearing on this problem. He recalls that Cohnheim found that pieces of fetal periosteum, injected into the veins, formed nodules of bone where they lodged in the pulmonary arteries; but, as these nodules soon underwent destruction, he concluded that the formation of metastases does not depend solely on peculiar properties of the cancer cells, but also on inhibition of the normal resorption processes. In carcinoma, Lubarsch believes, embolic tumor cells can not attain a foothold for growth unless poisonous substances are present in the blood stream which prevent the normal resorptive processes from destroying the cancer cells, and these poisonous substances come, presumably, from the primary growth. If Lubarsch's hypothesis is correct, it can be readily understood how, in some cases, removal of the primary growth could leave the metastases that have already formed in a condition under which they could not successfully resist the resorptive power of the surrounding tissues. Blumenthal[3] has found evidence that the autolytic enzymes of cancer cells differ from those of normal cells in being able to attack any sort of cell in the body, and that in advanced cancer these cancer enzymes exist free in the blood; possibly these are the agencies that Lubarsch believes prepare the soil for the successful growth of embolic cancer cells.

On the other hand, we can imagine that the checking of metastatic growths could result from a process of self-immunization. During the operative manipulation of the primary growth considerable quantities of cancerous material may be forced into the circulation, and the results might either be (1) a widespread dissemination of the disease, which is frequently observed, or (2) in case the resistance of the body were sufficient these cells would be destroyed, and in the process cause the formation of antibodies sufficient to enable the individual to overcome the secondary growths which had already obtained a foothold.

2. Ztschr. f. Krebsforschung, 1907, v, 117.
3. Same journal, p. 186.

THE PHYSIOLOGIC STUDY OF MIGRAINE.

Migraine has been made the subject of much more therapeutic experimentation than of systematic study, and it is probably the lack of the latter that accounts for the usual inefficiency of the former. It seems highly probable that if a considerable number of patients with this distressing affliction were made the subject of thoroughgoing, detailed study for a considerable period of time our information on the subject might be of a less speculative character than it now is; yet up to the present few such studies have been made. There is, however, a recent example of such a systematic study that may serve as a model for others.[1] This report is valuable, not so much for the results obtained, for these were not such as to establish any definite conclusions concerning migraine, but rather for the very thorough and systematic study of the case in hand. The importance of the work does not lie in the fact that in this particular patient the attacks of migraine occurred especially near the periods of menstruation or at a time midway between these periods; that the metabolism was found to be normal, so far as present methods can show; that the blood pressure was high, especially during the attacks; that there was a heightened acuteness for pain sensation during the headache—all these observations merely apply to the particular patient who was the subject of this study and can not be used for generalization. But when we can work over similar reports to the number of a hundred or more we shall probably know something more concerning this condition than we now do, and not until then can we put our therapeutics on a satisfactory basis. There is plenty of material for such studies—what is needed are men equipped and prepared for the work who are enabled to use their time in this way.

1. S. I. Franz: The Physiologic Study of a Case of Migraine, Amer. Jour. of Physiol., 1907, xix, pp. 14-33.

THE FUTURE OF THE TROPICS.

What the comparatively new science of bacteriology has accomplished for mankind could never have been foreseen a few years back, and even now we probably have a very inadequate idea of its possibilities. The recently expressed opinion of Col. W. T. Gorgas, that within the next two or three centuries the tropical countries, which offer a much greater return for man's labor than do the temperate zones, will be settled by the white races, and that the centers of population and civilization be transferred to the equatorial regions, may not prove a strictly correct prophecy, but its possibility can not be denied, *a priori*, as once it would have been. The discovery of the malaria germ and of the transmission of it and of that of yellow fever by mosquitoes has abolished the principal drawbacks to the habitability of these regions by the white races to a very great extent, and opened for the use of civilized man large portions of the earth's surface that were formerly practically forbidden to him. The question, of course, still remains to be settled whether the white man can retain his physical stamina and energy through residence in the tropics for many generations, and whether the mere conquest of pathologic germs is all that is required. The productiveness of tropical regions is of itself a drawback. The average man works only from necessity, and what renders mere existence the easier does not necessarily tend to the higher development of the race. It was Sir Charles Dilke, we believe, who once called the banana the curse of the tropics, and held that where it abounded human progress and ambition disappeared. There is some truth in this, but it may not be an absolute truth. It is not, likely, however, that the tropics will be the leading centers of civilization in the future. The temperate zones, where the struggle for existence brings out the higher abilities of man, will always dominate, and it is

not improbable that the tropics will be the recourse of the pervasive yellow races rather than of the white. There is every prospect that with our almost certain conquest of the pathologic conditions that exist in those regions their utility to mankind will be vastly increased and that higher civilizations than now occupy those lands will be developed. We may not be able to look on the tropics as a permanent home for the best of the ruling white races, even two or three centuries hence, but there is hardly any question but that they will be much more habitable and useful than they have been in the past.

POLICE DIAGNOSES.

Only recently[1] we called attention to the increasing frequency in this country of mistaken diagnoses on the part of police officials in dealing with those individuals who are found in an unconscious condition on the streets. According to a recent report,[2] the same degree of carelessness obtains in Great Britain. In the case cited it appears that a highly respected and eminently temperate member of Parliament, to relieve gastralgic pains, took frequent doses of a proprietary anodyne mixture during the day. Toward evening, feeling faint, he took two small "whiskies and soda," which caused the rapid absorption of the anodyne drug. The result was that he came back to consciousness to find himself in a police cell entered as "drunk and incapable." The morals are not hard to find. That a layman should have access to a mixture containing such drugs as chloroform, hydrocyanic acid and cannabis indica is in itself to be deprecated, and that the police, basing their diagnosis on the odor of whisky on the breath, should fail to differentiate between acute alcoholism and drug poisoning is further evidence that greater discrimination is called for in the police treatment of "plain drunks."

FINAL ACTION BY THE AMERICAN MEDICAL ASSOCIATION ON THE INSURANCE QUESTION.

The action of the House of Delegates at Atlantic City on the insurance question was final, so far as the American Medical Association is concerned. The report of the Committee on Insurance was a very strong and able one. It gave the names of the leading companies which have always adhered to, or which have restored, the full five-dollar fee for examinations, and recited in detail the protracted efforts made for, and the failure to secure, similar action from the New York Life, Mutual and Equitable, the first named company leading the opposition to the profession always. The report fully exposes the fallacy of the claim of these companies that the reduction of fees was necessary on account of the recent legislation in New York, and points out that the Manhattan, one of the safest and best companies of that state, which has never been involved in any charges of mismanagement, finds no difficulty in paying the full fee under the same law. The report also makes it plain that while "these companies insist that they be left to deal with individual physicians and not with the profession as a whole," that "they themselves have practically agreed to stand together in maintaining the reduced, insufficient and, we believe, unjust, fee, and that these companies can and should continue to pay a minimum fee of five dollars for examinations." The report was adopted unanimously, and, in accordance with the recommendation of the committee, "the whole matter was referred to the state and county societies for such action as they may deem wise and proper." It was again urged, however, that the will of the majority be not made a test of membership, or professional recognition, kindness and moral suasion to be relied on instead. A large per cent. of the county societies, nearly all of them in some states, already have the matter fully in hand. In some counties the organization is not yet sufficiently complete for effective action, but in a large majority of them only good leadership and the same united action essential for every other phase of work is necessary to give an ultimate victory in this matter everywhere.

1. THE JOURNAL A. M. A., June 8, 1907, 1948.
2. London Letter, this issue, page 253.

Medical News

ILLINOIS.

Sanatorium Enlarged.—A contract has been let for a building to accommodate 10 additional patients at the Edward Sanatorium, Naperville, bringing the capacity of the institution up to 25 patients.

Smallpox.—Smallpox is reported at Belvidere, Iroquois, Winslow, Mechanicsburg and Thomasboro. At Mechanicsburg no quarantine has apparently been enforced, and the smallpox patients have been mingling with others not affected with the disease.

Personal.—Dr. John F. Keefer has been elected president; Dr. Charles Parker, vice-president, and Dr. Stephen A. Allen, Rock Falls, secretary-treasurer, of the Sterling and Rock Falls Physicians' Club.——Dr. P. S. Weidman, Edwardsville, was found unconscious in his room July 9, and is still critically ill. ——Dr. James M. G. Carter, Waukegan, has moved to Chicago.

Society Incorporated.—The Woman's Medical Society of the State of Illinois has been incorporated by Dr. Marion K. Bowles, Joliet, and Drs. Sara C. Buckley and Bertha Van Hoosen, Chicago. The purpose of the organization is to bring into communication the medical women of Illinois for the purpose of securing cooperation, promoting all objects of interest to women in medicine, and for increasing interest in, and the membership of, the Illinois State Medical Society.

State Gives Antitoxin.—The State Board of Health announces that the law providing for the free distribution of diphtheria antitoxin by the State Board of Health became effective July 1, but that on account of the delay in the details of purchase and manufacture the supplies will not be ready for distribution before October 1. Meanwhile physicians will be able to secure antitoxin from any of the agents of the board without cost to the poor, on obtaining an order from the supervisor or overseer, as required under the act of 1905.——Cerebrospinal meningitis has been added by the State Board of Health to the list of infectious diseases. Notification is required and public funerals of individuals dying from the disease are prohibited.

Chicago.

New Site for Hospital.—The Chicago Eye, Ear, Nose and Throat Hospital has completed the purchase of a site at 204 Washington Street, and will erect an eight-story building at a cost of from $125,000 to $150,000.

Free Clinic for Tuberculosis.—The Chicago Tuberculosis Institute has opened a free clinic for the diagnosis and treatment of tuberculosis at the Olivet House, 34 Vedder Street, which is open to patients Monday and Thursday at 10 a. m.

Smallpox in University of Chicago.—A summer student at Green Hall, one of the dormitories for women at the University of Chicago, was removed to the Isolation Hospital July 10 on account of smallpox, and the 60 students in that dormitory were vaccinated by officials of the health department.

Personal.—Dr. Channing W. Barrett has recently been appointed a member of the gynecologic staff of the Chicago Policlinic.——Dr. George W. Hall and family have returned after seven months in Europe.

Mortality of the Week.—During the week ended July 13, 483 deaths were reported, equivalent to an annual death rate of 11.95 per 1,000. The deaths numbered 27 more than for the previous week and 15 less than for the corresponding week of 1906. Pneumonia caused 57 deaths; consumption, 52; violence, including suicide, 42; heart diseases, 36; nephritis, 32, and acute intestinal diseases, 30. Of the deaths from communicable diseases, scarlet fever caused 13; diphtheria, 8; measles and typhoid fever, 5 each, and whooping cough, 3.

Hospital License Revoked.—The revocation of the license of the Irene How Sanatorium is said to have been recommended by Health Commissioner Dr. William A. Evans, because the hospital has not complied with the ordinance which demands a room for the proper care of the dead, pending the removal of the bodies; or for the accommodation of patients with contagious or infectious diseases, and because no record has been kept of the deaths or of children taken for adoption, and because the physicians named as attending physicians are not in attendance at the institution.

IOWA.

Opposes Rummage Sales.—The Iowa State Board of Health says regarding rummage sales, "the possibilities of the spread of disease are alarming. Old clothes which have lain about the home for years are brought forth pregnant with every germ known to medical science, and handled by many different people."

Smallpox.—A member of an opera company, en route from New York City to Denver, was taken ill with smallpox and placed in Clinton Isolation Hospital.——Smallpox claimed 3 new cases in Union Township, near Algoona, last week, making 7 cases in all.——The auditor of Dubuque County made an estimate of the cost to the county of the recent smallpox scare. The expense up to the present time has been nearly $11,000, including cost of quarantine, maintenance of isolation hospital, and physicians' expenses.

Election.—The semi-annual meeting of the Iowa Union Medical Society closed at Iowa City July 10. The following officers were elected: President, Dr. John M. Ristine, Cedar Rapids; vice-presidents, Drs. Erie W. Brown, Marengo, and Samuel H. Watson, Blairstown; secretary, Dr. Alexander Crawford, Mount Vernon; treasurer, Dr. George P. Carpenter, Cedar Rapids, and censors, Drs. Hollis W. Bender, Cedar Rapids; John W. LaGrange, Marion, and Edwin Burd, Lisbon. The next meeting of the society will be held in Cedar Rapids in December next.

KENTUCKY.

Hospital Opened.—The Good Samaritan Hospital, Lexington, was formally opened to the public July 3. Addresses were made by the president of the board of trustees, Mr. Charles Kerr, a member of the hospital board and others.

Expert Testimony and the Bar Association.—At its meeting last week the Kentucky State Bar Association adopted the following preamble and resolution:

WHEREAS, The abuses of expert testimony have grown to such proportions as to become a public reproach and often actually to pervert justice; and,

WHEREAS, The rules of the present system or lack of system regulating such testimony are deserving of the most serious consideration in all the branches thereof; and,

WHEREAS, The State Medical Association is qualified to give great assistance in consideration of the subject of medical expert testimony; now, therefore, be it

Resolved, That this association create a committee to be composed of three members to be appointed by the president, whose duty it shall be to consider the subject of expert testimony in all branches; that said committee be instructed to confer with a like committee from the State Medical Association on medical expert testimony, and further instructed to report back to this association at its next annual meeting.

Commencements.—Kentucky University held its last commencement on June 30, not as Kentucky University, however, but as the Medical Department of the University of Louisville, the two colleges having consolidated, the graduates receiving a diploma from the University of Louisville. A class of about 95 was graduated. The valedictory was delivered by Thomas H. Shy, and C. F. Richards received the highest honor, with it going the appointment to the City Hospital.——The annual commencement exercises of the Kentucky School of Medicine were held on July 12, when a class of 64 was graduated. The valedictory address was delivered by Warren H. Willyard. Dr. Enoch W. Samuels delivered the doctorate address.——The commencements of the Louisville Medical College and of the Hospital College of Medicine were held June 29 and 30, respectively.

Merger Abandoned.—The coalition or merger contemplated between the Hospital College of Medicine and the Louisville Medical College, which at one time seemed certain of accomplishment, has been interrupted and the attempt most likely permanently abandoned. One of the committee of the Hospital College of Medicine makes the following statement: The failure to effect the consolidation is a result of a difference of aims and views of the two faculties. The committee appointed by the Hospital College of Medicine, with plenary powers, believed that if such a combination was effected, it should be with a view to prosecuting a course of the highest attainable standard, which, of course, means the equipment of approved laboratories, the employment of capable teachers for every department and the conducting of a graded course of instruction after the requirements of the latest methods. Honest differences of opinion as to the manner in which these steps were to be carried out led the committee to realize that there was a lack of harmony which would not only prevent agreeable and satisfactory business relations, but defeat the very purposes of the enterprise. Without these could be secured the committee felt it would be better for the present, at least, to go on separately as before. The differences were not so much about any one question as regarding the general aim and scope of the curriculum; the prospect of trying differences of opinion without the hoped-for advance of standard led the committee to recommend to the faculty that the effort be given up. This was done unanimously and accordingly the negotiations were terminated.

MARYLAND.

Personal.—Dr. Samuel T. Earle has resigned as professor of physiology and rectal diseases in the Baltimore Medical College and will devote most of his time to medical authorship.——Dr. Gordon H. Claude has been elected mayor of Annapolis.——Dr. Frank H. Thompson, Annapolis, has been elected an alderman.——Dr. Howard A. Kelly, Baltimore, is at his hunting lodge in Canada for the summer.——Bartgis McGlone, Ph.D., has been elected professor of biology at St. John's College, Annapolis.——Dr. Edgar P. Sandrock, Baltimore, has been appointed assistant gynecologist at St. Agnes' Hospital, Baltimore.

MASSACHUSETTS.

Floating Hospital.—The Boston Floating Hospital has inaugurated its fifteenth summer season of humanitarian work among the sick and suffering babies. Dr. Robert W. Hastings, Brookline, continues as resident physician of the hospital.

Commencement Exercises.—At the twenty-seventh annual commencement exercises of the College of Physicians and Surgeons, Boston, held June 20, a class of twenty-six was graduated. The doctorate address was made by Rev. Dr. McElveen, and the degrees were conferred by the president, Joseph Bennett.

Harvard Alumni Meet.—At the annual meeting of the Harvard Medical Alumni Association in the administration building of the school on the Fenway, Boston, the following councilors were elected for a term of three years: Drs. James F. A. Adams, Pittsfield; John Collins Warren, Boston, and Elbridge C. Cutler, Boston.

Tufts Alumni Meeting.—At the annual meeting and election of the Tufts Medical College Alumni, Boston, Dr. Charles P. Thayer, formerly professor and now professor emeritus of anatomy, was the guest of honor and one of the speakers. A portrait of Dr. Thayer was exhibited at the meeting and will later be presented to the college. The following officers were elected: President, Dr. Wilfrid G. Grandison, Charlestown, Boston; vice-presidents, Drs. Mary E. Gill, Boston, and Leslie J. O'Brien; secretary, Dr. William J. Sheehan, South Boston; assistant secretary, Dr. Edith M. Brooks, Boston, and treasurer, Dr. William B. Keeler, Roxbury, Boston.

Personal.—Dr. H. W. Mitchell, of the medical staff of the Danvers Insane Hospital, has been appointed superintendent of the Eastern Maine Insane Hospital, Bangor.——Dr. Herbert C. Clapp, Boston, examining physician of the Massachusetts State Sanatorium since its opening nearly nine years ago, has retired under the new rules. A permanent resident executive medical man is now in charge of the sanatorium, and the visiting staff has been abolished.——Dr. Charles F. Caverly, Boston, sailed for London June 29.——Dr. J. J. Mahoney, of the staff of the Massachusetts State Sanatorium, Rutland, has been appointed physician at the Cragmoor Sanatorium, Colorado Springs, Colo.——Dr. James J. McDevitt has been appointed

medical inspector of the Boston Board of Health.——Dr. Ralph P. Kent, Attleboro, was seriously injured in a collision between his automobile and two loaded coal wagons June 25.——Dr. Edward O. Otis, Boston, has retired from the visiting staff of the Massachusetts State Sanatorium, Rutland.——Dr. George F. Jelly, Boston, has been appointed co-master with Judge Edgar Aldrich, Littleton, N. H., to determine the mental competency of Mrs. Mary Baker G. Eddy, and has accepted.

MINNESOTA.

Epidemic Diseases.—The diphtheria epidemic on the Biwabik Range has been stamped out and the authorities are in full control of the situation.——The chief clerk of the State Board of Health has returned from Parkers Prairie, where he found a large number of cases of scarlet fever.

Personal.—Dr. Justus Ohage, formerly health commissioner of St. Paul, has been given the order of the Red Eagle by the emperor of Germany.——Dr. J. H. Nichols, Minneapolis, was seriously injured in an automobile accident on Riverside Drive, between St. Paul and Minneapolis, July 7.

State Society Meeting.—The thirty-ninth annual meeting of the Minnesota State Medical Association will be held in Duluth August 13-15. The House of Delegates meets on August 12. The oration in surgery will be delivered by Dr. Thomas A. Davis, Chicago, and that on medicine by Dr. Charles L. Greene, St. Paul. The medical profession of Duluth has arranged a drive around the city August 13 and a steamer ride on Lake Superior on the evenings of August 13 and 14.

NEBRASKA.

Personal.—Dr. William H. Wilson, Table Rock, has been elected state health inspector, with headquarters at Lincoln.——Dr. Martin E. Floersch, Hartington, with his wife and mother, have returned from Vienna.

Medical Women's Club.—The Medical Women's Club of Lincoln was recently organized, with the following officers: President, Dr. Laura J. Brown; vice-president, Dr. Ines C. Philbrick, and secretary-treasurer, Dr. Mabel Dunn.

NEW JERSEY.

Sailed for Europe.—Dr. Carl Buttner, Orange, sailed for Europe July 2.——Dr. Henry C. Symmes sailed for London June 29.

Typhoid in Hospital.—Typhoid fever has broken out at the State Hospital for the Insane, Trenton, where six cases are reported.

Wins Suit.—Dr. Walter S. Washington, Newark, has won his suit against Ocean County for services rendered as expert in the trial of Dr. Frank Brouwer, Twins River. He was awarded judgment with interest.

Personal.—Dr. H. N. Wardle has succeeded Dr. Samuel B. English as resident physician at the Cooper Hospital, Camden.——Drs. Charles J. Kipp, Newark, and James S. Green, Elizabeth, have resigned as members of the board of managers of the State Sanatorium for Tuberculosis.——Dr. Henry H. Davis, Camden, has been selected as superintendent of the State Tuberculosis Sanatorium, Glengardner.——Dr. Victor Mravlag, Elizabeth, has received two letters, purporting to come from the "Black Hand," one demanding $500 and the other predicting the physician's death.

NEW YORK.

For New Hospitals.—The legislature has authorized a new site and buildings for the Randall's Island House of Refuge, a custodial asylum for epileptics, and an additional state hospital for the insane to be located near New York City. The plan of building this latter institution near Comstocks, Washington County, has been abandoned. The commission for chosing the site is to report to the legislature in 1908.

State Board of Charities.—The State Board of Charities has appointed Dr. Gertrude E. Hall, of Albany, almshouse inspector, at a salary of $1,200. The board adopted a resolution requesting the attorney general to take an appeal from the decision of Supreme Court Justice Pitts in the case against the Bellevue and allied hospitals of New York City. The board sought to compel these hospitals to submit their plans for building improvements for its approval, but the judge decided that they need not do so.

May Vital Statistics.—The May bulletin of the State Department of Health shows a rise in the total number of deaths from pulmonary tuberculosis from a five-year average of 1,217 to 1,302, which is attributable to the unseasonable weather. Of cities having more than 50,000 population, Yonkers shows the lowest annual death rate, 15 per thousand population, and Utica has the highest, 24.3. In cities of between 20,000 and 50,000 population, Jamestown has an annual death rate of 11.3 per 1,000. In cities under 20,000 Middletown leads with a death rate of 8.3 per 1,000. The highest annual birth rate was shown by Rome, 39.3 per 1,000, the lowest by Plattsburg, with 10.3 per thousand.

New York City.

Death Rate Lower.—The death rate in New York City is well below the mark for the corresponding period of 1906. During the week ended June 28, 1906, it was 17.11. This year the week ended June 28 had only a death rate of 16.60 per 1,000.

More Milk Inspectors.—The Department of Health has asked for $175,000 for the employment of one hundred additional milk inspectors and four more supervising inspectors until the end of the year. The milk supply of this city comes from between 30,000 and 40,000 farms in six states and from 600 to 700 creameries which gather the milk from the farms. Hence the need of a greater working force.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended July 6, 616 cases of measles, with 34 deaths; 326 cases of diphtheria, with 39 deaths; 312 cases of tuberculosis, with 136 deaths; 306 cases of scarlet fever, with 28 deaths; 38 cases of typhoid fever, with 7 deaths; 18 cases of whooping cough, with 8 deaths; 14 cases of cerebro-spinal meningitis, with 11 deaths; 76 cases of varicella and 1 case of smallpox; a total of 1,709 cases and 263 deaths.

Personal.—Dr. Walter Bensel was appointed commissioner of street cleaning, vice Macdonough Craven, resigned. It is understood that Dr. Bensel will retain this position only three months, and that at the end of this time he will resume his duties as sanitary superintendent, Department of Health.——Dr. and Mrs. Sinclair Tousey sailed for Europe June 20; Dr. William T. Bull, Dr. and Mrs. W. A. Bell and Dr. and Mrs. David D. Stevens, July 10; Dr. and Mrs. Adolph Reich, July 11, and Drs. John S. Billings, Gordon R. Hall and E. Guernsey Rankin, July 13.

NORTH CAROLINA.

Milk and Meat Inspection.—The city board of health of Asheville has provided for a regular and systematic examination of all milk and meat offered for sale to the public.

Fire at Medical School.—The dissecting room of the Medical Department of the State University, Chapel Hill, was destroyed by fire June 22, causing a total loss with the exception of the preserving tank. The trustees will at once begin the erection of a larger and more commodious structure.

Personal.—Dr. Lois Boyd, Statesville, has been elected resident physician and instructor in physiology and hygiene at the Winthrop State Normal College of South Carolina, Rock Hill.——Dr. William S. Jordan, Raleigh, has been appointed resident physician to the Highsmith Hospital, Fayetteville.——Dr. George W. Graham, Charlotte, has returned after three months in Europe.——Dr. John R. Irvin, Charlotte, announces his retirement from general practice and his intention to devote himself to special work.

Society Meeting.—At the annual meeting of the Rowan County Medical Society, held in Salisbury July 8, the following officers were elected: President, Dr. J. Meigs Flippin, Salisbury; vice-president, Dr. H. L. Monk; secretary, Julius A. Caldwell, Jr., Salisbury; treasurer, Dr. Henry T. Trautham, Salisbury, and delegate to the state society, Dr. Robert V. Brawley, Salisbury.——The New Hanover County Medical Society, at its recent meeting, elected Dr. Joseph Akerman president; Dr. S. Everett Koonce, vice-president, and Dr. Charles T. Harper, secretary, all of Wilmington.

NORTH DAKOTA.

State Association Officers.—In the report of the annual meeting of the North Dakota State Medical Association, in THE JOURNAL, of July 6, an error was made. The list of officers elect should read: President, Dr. Charles McLachlin, New Rockford; vice-presidents, Drs. H. A. Beaudoux, Fargo; William H. M. Phillip, Hope, and John W. Sifton, Jamestown; secretary, Dr. Hezekiah J. Rowe, Casselton, and treasurer, Dr. John D. Taylor, Minot.

OHIO.

Akron Milk Commission Appointed.—A milk commission for Akron has been appointed by the Summit County Medical Society, consisting of Drs. Albert A. Kohler, Frank C. Reed, William Murdoch, Simon Morgenroth, Elizabeth M. Weaver and John H. Weber and Mr. C. B. Raymond.

Academy Joins Associated Organizations.—The Cincinnati Academy of Medicine has become a member of the Associated Organizations of Cincinnati, which comprises 50 separate organizations, with a total membership of over 15,000. Drs. Otto P. Geier, Simon P. Kramer and Samuel E. Allen will represent the academy.

Alumni Meeting.—The Miami Medical College Alumni Association on June 1 held the most successful meeting in its history, which was attended by more than 350 of the alumni. The following officers were elected: President, Dr. Arthur L. Knight, Madisonville; vice-presidents, Drs. Mark A. Brown, Cincinnati; M. H. Haynes, Joseph V. Longfellow, Urbana; John P. Dugan, Springfield, and Samuel E. Allen, Cincinnati; secretary-treasurer, Dr. Edwin M. Craig, Cincinnati, and executive committee, Drs. Arthur J. Markley, William C. Harris and Abram D. Stapleford, all of Cincinnati.

Epidemic Diseases.—Adams Mills has been quarantined because of the prevalence of diphtheria. It is reported that three children have died and 12 others are seriously ill.——St. Vincent's Hospital, Toledo, has been closed on account of the discovery of smallpox.——Smallpox is reported in Liberty Township, near Napoleon.——On account of a case of smallpox in the Toledo State Hospital for the Insane, 115 patients have been under quarantine for several days.——The smallpox epidemic in Lindenwald shows that during the course of the disease there were 22 cases and that all but one of the patients has entirely recovered.

Personal.—On the occasion of the eighty-second birthday anniversary of Dr. Benjamin B. Leonard, West Liberty, the medical societies of Champaign and Logan counties held a joint meeting and banquet and presented Dr. Leonard with a gold-headed cane.——Dr. Wade MacMillan, Cincinnati, has resigned as a member of the committee to locate the new State Hospital for Crippled and Deformed Children and Dr. W. D. Haines, Cincinnati, has been appointed in his place.——Dr. Jesse S. Wyler, after two years' study in Vienna, has returned to Cincinnati.——Dr. William D. Porter has been elected clinical professor of obstetrics in Miami Medical College, Cincinnati.

PENNSYLVANIA.

Anti-Spitting Crusade.—The enforcement of the anti-spitting ordinance of Pittsburg was begun June 26, and on the first day forty-six individuals were arrested, each of whom was fined $3.

Communicable Diseases.—Donora is reported to have an epidemic of scarlet fever.——There are said to be 14 cases of smallpox in Neshannock township, north of New Castle, and a strict quarantine has been established.

Medical Society Organized.—The Sharon, South Sharon and Sharpsville Medical Society has been organized with the following officers: President, Dr. Theodore C. Peterson; vice-president, Dr. George W. Kennedy; secretary, Dr. Charles I. Walker; treasurer, Dr. John W. Elliott; committee on constitution and by-laws, Drs. Samuel C. Johnson, William G. Berryhill and Andrew J. Mitchell.

Personal.—Mr. Wallace Hatch, Washington, has been selected as the executive secretary of the Pennsylvania Society for the Prevention of Tuberculosis. Mr. Hatch was formerly secretary of the Washington committees on prevention of consumption, improvement of housing conditions and summer outings.——Dr. Frederick Bushong, Lancaster, has been elected resident physician to the Pottstown Hospital, vice Dr. Raymond Bloss, Bethlehem.

Society Meeting.—The Northwestern Pennsylvania Medical Association, which comprises the physicians of six counties, held its fifth annual meeting at Cambridge Springs, June 25 and 26. Dr. Morris S. Guth, Warren, presided, and Dr. James Johnston, Bradford, was elected president; Drs. James B. Siggins, Oil City; George A. Reed, Erie, and William C. Brittain, Cochranton, were elected vice-presidents; Dr. Michael V. Ball, Warren, was elected secretary; Dr. Thomas Elliott, Sharon, assistant secretary, and Dr. Charles W. Schmehl, Warren, treasurer.

Appropriations for State Charities.—Governor Stuart approved the appropriations made by the Legislature for the following institutions on June 15:

Hospital for Indigent Insane, $2,500,000; Feeble Minded and Epileptic, Spring City, $643,500; Insane Hospital, Wernersville, $80,600; Insane Hospital, Allentown, $494,365; Insane Hospital, Harrisburg, $254,000; Insane Hospital, Norristown, $416,000; Tuberculosis, care and treatment, $670,000; Insane Hospital, Danville, $429,300; Insane Hospital, Warren, $267,500. Adrian, $28,600; Allegheny General, $200,000; Altoona, $45,000; Beaver Valley, $23,000; Bellefonte, $12,000; Christian Bubler, $17,000; Beaver, $15,000; Butler, $20,000; Bradford, $35,000; Simon H. Barnes, $5,000; Braddock, $35,000; Bradford County, $4,000; Charity, Pittsburg, $50,000; Columbia, Wilkinsburg, $30,000; Conemaugh Valley, Johnstown, $50,000; Corry, $15,000; Clearfield, $10,000; Washington City, $10,000; Canonsburg, $3,000; Carbondale, $20,000; Douglas Memorial, $15,000; Dubois, $6,000; Eye, Ear and Throat, Pittsburg, $35,000; Elk County, $24,000; Franklin, $15,000; General and Emergency, Pittsburg, $2,000; Greenville, $5,000; Grove City, $3,000; Poor Consumptives, Oil City, $5,000; Howard, $15,000; Hamot, Erie, $25,000; Johnstown City, $7,000; Kane, $12,000; Kittanning, $8,000; Latrobe, $4,000; McKeesport, $65,000; Monongahela, $15,000; Meadville, $15,000; Mercy, Pittsburg, $175,000; Mount Pleasant, $18,000; Markleton, $13,000; Miners', North Cambria, $8,000; Austin, $5,000; Oil City, $21,000; Ohio Valley, $25,000; Passavant, Pittsburg, $5,000; Oakburn Epileptic, $9,000; Sayre, $35,000; Sunbury, $15,000; Pittston, $25,000; Presbyterian, Pittsburg, $90,000; Pittsburg, for Children, $20,000; Coaldale, $150,000; Pittsburg Sanitarium, $15,000; Rosalia, Foundling, Pittsburg, $22,000; Bloomsburg, $3,000; St. Joseph's, Pittsburg, $15,000; St. Francis's, Pittsburg, $125,000; St. Vincent's, Erie, $15,000; St. John's, Allegheny, $35,000; Newcastle, $33,000; South Side, Pittsburg, $85,000; Spencer, $15,000; Bellevue, $3,000; Sewickley, $50,000; Carlisle, $4,500; Titusville, $10,000; Taylor, $9,500; Uniontown, $30,000; Western Pennsylvania, Pittsburg, $275,000; Warren, $15,000; Wilkesbarre, $45,000; West Side, Scranton, $20,000; Greensburg, $35,000; Washington, $14,000; Honesdale, $5,000; Wyoming Valley, $2,500; Waynesburg, $12,000; West Mountain Sanitarium, $5,000; Allentown Hospital: $25,000; Berwick Hospital, $2,000; Coatesville Hospital, $15,000; Chambersburg Hospital, $10,000; Columbia Hospital, $15,000; Charity, Montgomery County, $25,000; Chester County Hospital, $16,000; Chester Hospital, $24,000; Easton Hospital, $30,000; Consumptives, White Haven, $70,000; Good Samaritan, Lebanon, $15,000; Harrisburg Hospital, $35,000; Lock Haven Hospital, $15,000; Lancaster General, $30,000; Lewistown Hospital, $20,000; Mercy, Wilkesbarre, $40,000; Nanticoke Hospital, $10,000; Roaring Springs Hospital, $10,000; Pottsville Hospital, $45,000; Phoenixville Hospital, $30,000; Pottstown Hospital, $15,500; Reading Hospital, $25,000; St. Luke's, South Bethlehem, $30,000; St. Joseph's, Reading, $20,000; Shamokin Hospital, $30,000; Williamsport Hospital, $55,000; York Hospital, $20,000; Christian, York, $3,000.

Philadelphia.

Personal.—Dr. James P. Mann, for the past eleven years clinical professor of orthopedic surgery in the Medico-Chirurgical College and Hospital, has been appointed professor of orthopedic surgery in the institution.——Dr. and Mrs. Aloysius O. J. Kelly sailed for Europe July 13, and Dr. Warfield T. Longcope July 10.

Medico-Chirurgical College Has Optional Preliminary Year.—A statement from the secretary of the Medico-Chirurgical College says that the school has planned to offer a preliminary year devoted to physics, chemistry, biology and modern language, beginning this fall. While the course is optional, a special inducement is offered by the arrangement that for those entering during the session of 1907-8 the total fees for the five-year course will be the same as for those entering on the four-year course.

Appropriations for Philadelphia's Charities.—The governor approved the appropriations made by the legislature for the following institutions on June 15:

Institution for Blind, $93,500; Pennsylvania Institution for Deaf and Dumb, $276,000; Frankford Hospital, $50,000; Cynecean Hospital, $25,000; Garrettson Hospital, $30,000; German Hospital, $66,600 Oncologic Hospital, $20,000; Jefferson Hospital, $200,000; Jewish Hospital Association, $60,000; Kensington Hospital for Women, $15,000; Lying-in Charity Hospital, $18,300; Medico-Chirurgical Hospital, $200,000; Maternity Hospital, $6,600; Mount Sinai Hospital, $25,000; Orthopedic Hospital, $35,000; Philadelphia Polyclinic, $70,000; Rush Hospital, $50,000; Roosevelt Hospital, $4,000; St. Luke's Hospital, $35,000; St. Christopher's Hospital, $10,000; St. Joseph's Hospital, $25,000; St. Mary's Hospital, $20,000; St. Timothy's Hospital, $25,000; St. Vincent's Maternity, $5,000; St. Agnes's Hospital, $50,000; Samaritan Hospital, $50,000; Sanitarium Association, $2,500; Stetson Hospital, $5,000; University of Pennsylvania Hospital, $200,000; West Philadelphia Hospital for Women, $10,000; Will's Eye Hospital, $60,000; Women's Hospital, $40,000.

Health Report.—The number of deaths reported for the week ended July 6 aggregated 468, an increase of 62 over the number reported last week, and a decrease of 71 from the number reported in the corresponding week of last year. The prevailing hot weather caused an increase in the death rate this week, due chiefly to increased mortality among infants. The principal causes of death were as follows: Typhoid fever, 6; whooping-cough, 4; tuberculosis, 57; cancer, 25; alcoholism, 5; apoplexy, 13; endocarditis, 4; heart disease, 33; diseases of arteries, 7; acute respiratory diseases, 36; gastritis, 5; enteritis, 54; hernia, 4; cirrhosis of liver, 6; appendicitis, 11; acute nephritis, 10; Bright's disease, 49; premature birth, 11; congenital debility, 16; old age, 5; drowning, 5; injuries, 11, and marasmus, 7. There were 123 cases of contagious disease reported, with 8 deaths, as compared with 132 cases and 18 deaths during the preceding week.

TEXAS.

Personal.—Dr. William H. Anderson, El Paso, is reported to be critically ill after an operation for appendicitis in a hospital at Albuquerque, N. M.

Fire Damage.—A fire at Mineral Wells, June 30, destroyed the Mineral Wells Sanitarium, with a loss of $18,000, two-thirds of which is covered by insurance.

Exclusion of Consumptives.—It is announced that the state health officer will, in a short time, order state quarantine against consumptives in the advanced stage of the disease. The reason for this action is apparently because of the defeat of the tuberculosis sanatorium bill last winter in the legislature, which passed the house, but was defeated in the senate.

Commencement.—At the annual commencement exercises of the University of Texas, Medical Department, Galveston, May 31, degrees were conferred on a class of 27. The exercises were conducted by Dr. W. S. Carter, dean of the faculty. The doctorate address was delivered by Dr. Marvin L. Graves and the degrees were conferred by the president of the university, David F. Houston.

Society Meetings.—At the fifth semi-annual meeting of the El Paso-Big Springs District Medical Society, held at Midland June 18, a resolution was adopted endorsing the action taken by several county societies that no life insurance examination should be made for a fee of less than $5 and urging other local societies to take similar action.——At a meeting of the Williamson County Medical Society, held in Georgetown June 19, a resolution was passed that the society call the attention of all druggists in the county to the new medical law which went into effect July 12, and which provides against all counter prescribing, and that druggists so offending will be prosecuted.

UTAH.

Contagious Diseases.—There are now 12 cases of smallpox in the Isolation Hospital, Salt Lake City, all of relatively mild type.——Twenty cases of scarlet fever are reported from Bingham.

District Medical Society Meeting.—The summer meeting of the Third Councilor District Medical Society will be held at Richfield, August 13 to 14. In addition to the scientific program, arrangements are being made to form fishing and camping excursions, with a view to visiting one or more of the southern lakes of Utah or the Grand Canyon of the Colorado. At the second session addresses will be given by Dr. Harry D. Niles, Salt Lake City, president of the Utah State Medical Association; by members of the state medical council and by Dr. Leslie W. Snow, president of the Salt Lake County Medical Society.

VERMONT.

Communicable Diseases.—Smallpox in mild form is reported to have broken out at Northfield Falls.——The State Health Department has suspended services in the schools and churches of Essex Junction because of the presence of diphtheria.

School for Health Officers.—The ninth annual school of instruction for health officers of Vermont was held July 17 to 20 at Burlington, with more than 100 officers from different towns in the state in attendance. The opening address was delivered by Dr. Charles S. Caverly, Rutland, president of the state board of health. The state laboratory of hygiene was open throughout the meeting to the visiting health officers.

Society Meetings.—At the annual meeting of the Franklin County Medical Society, held in Saint Albans, the following officers were elected: President, Dr. Fred S. Hutchinson, Enosburg Falls; vice-president, Dr. A. Lincoln Cross, Swanton; secretary-treasurer, Dr. Edwin A. Hyatt, St. Albans, and delegates to the state society, Drs. Edmund J. Melville, Saint Albans; Eber L. Washburn, East Berkshire, and E. Merriman Brown, Sheldon.

WEST VIRGINIA.

Smallpox.—Smallpox was recently discovered in the Wood County jail, Parkersburg. All the prisoners were vaccinated and the patient was removed to the county isolation hospital.

Personal.—Dr. Joseph I. Warder, Weston, was thrown from his buggy recently, fracturing three ribs.——Dr. C. W. Hudson has received his commission as health officer of Parkersburg.——Dr. Rudolph M. Rau, Wheeling, who has been ill in Hot Springs, Ark., is reported to be convalescent.——Dr. Samuel L. Jepson, Wheeling, was recently given the honorary degree of doctor of science by the Western University of Pennsylvania, Pittsburg.——Dr. J. B. Johnston, professor of zoology in the University of West Virginia, has resigned to accept the position of assistant professor of anatomy of the nervous system in the department of histology and embryology of the University of Minnesota, Minneapolis.

WISCONSIN.

Smallpox.—Two cases of smallpox were recently discovered at Ironwood.——There are said to be forty cases of smallpox at Spooner and a strict quarantine has been established.——Four cases of smallpox in one family are reported in Linwood.——Washburn reports two cases of smallpox.——Several cases of smallpox are reported from Grand View.

Hospital Notes.—The Wagner Pavilion of the Milwaukee Tuberculosis Sanatorium has been completed, with accommodation for eight patients.——The plans for the Infants' Fresh Air Sanitarium, Milwaukee, have been completed and approved and bids for the construction have been asked. The building is to be 80 feet long by 40 feet wide. The front of the building will face the lake, and, when completed, the building will be an immense pavilion, entirely roofed over and open except on the west side.

Personal.—Dr. Albert J. Pullen, North Fond du Lac, has been re-elected to the school board for the third time.——Dr. and Mrs. Sherman E. Wright, Marinette, will sail for Europe August 1.——Dr. Nehemiah Dodge, at one time a leading physician of Milwaukee, has become an inmate of the Milwaukee County Hospital. His friends are raising funds to have him removed to a private hospital.——Dr. W. T. McNaughton, formerly surgeon to the Soldiers' Home, Milwaukee, sailed for England July 1.

GENERAL.

From Weekly to Monthly.—The *St. Louis Medical Review*, established in 1875 as a weekly journal and conducted for nearly three years under the efficient editorship of Dr. Kenneth W. Millican, announces that, with the issue of July 6, it ceases to become a weekly publication and will be continued henceforth in a new series as a monthly magazine.

Personal.—Major James M. Kennedy, surgeon U. S. Army, has been made honorary professor of surgery, and Henry Rutherford, assistant surgeon U. S. Army, honorary professor of medicine in the University of California.——The committee of Filipinos, appointed to investigate the death of thirteen prisoners in the Bilibid prison, following inoculation with contaminated serum in an experiment regarding cholera virus, reports that no one is responsible for the accident and specifically exonerates Dr. Richard P. Strong, of the Bureau of Science, who was in charge of the laboratory and conducting the experiments.——Medical Inspector Presley M. Rixey, surgeon general, U. S. Navy, has been advanced to the rank of medical director.

LONDON LETTER.

(*From our Regular Correspondent.*)

LONDON, July 6, 1907.

Trypsin and Cancer Research.

A large meeting of the general committee of the Cancer Research Fund was held recently at which Sir William Church, in moving the adoption of the report of Dr. Bashford, the superintendent of the Imperial Cancer Research Laboratory, referred to alleged cures for cancer. He stated that no curative value could be attached to any of those which had been tested. Particular attention had been given to trypsin without any effect on the growth or development of tumors.

A School for Mothers.

Dr. Sykes, health officer of the large London borough of St. Pancras, has made a new departure in public health by establishing a school for mothers. Young and old married women will be instructed in the clothing, feeding and tending of children by means of objec. lessons on the babies of the pupils. With the object of promoting breast-feeding, dinners for underfed nursing mothers will be provided at the cost of a few pence.

Chlorodyne Intoxication Simulating Alcoholism.

A member of parliament and a barrister has earned notoriety resulting from the incautious use of chlorodyne. He arrived early in the morning at a London hotel after a night journey, and after breakfast was seized with griping pain for which he took chlorodyne, pouring it on his tongue undiluted. This he continued to do during the day, with the result that he had consumed, by the evening, two bottles. Meanwhile he went to his office and did some work. Feeling faint, he took two small "whiskies and soda." The next thing he remembered was entering an omnibus. He recollected nothing further until he found himself in a police cell, where he had been taken by a constable who found him apparently drunk and incapable. He had no recollection of the formalities which preceded his release from the police station until he saw his name on the placards of the papers as having failed to surrender at the police court. Eventually the charge of drunkenness was heard and dismissed. Abundant evidence both of his unimpeachable

character and temperate habits was produced and also as to his sobriety on the day in question. Drs. Luff and J. S. Bury and Mr. A. J. Pepper gave evidence to the effect that the amount of chlorodyne which he had imbibed during the day had accumulated in an empty stomach until, finally diluted and its absorption aided by the action of the whisky and seltzer, it produced the symptoms of intoxication.

Centralized Authority for London Hospitals.

A central hospital authority for London has been long thought desirable by the profession, but no practical steps in that direction have ever been taken. At a special general meeting of the metropolitan counties' branch of the British Medical Association the subject was discussed and the following resolution passed: "It is desirable with view of abating the present abuse of hospital charity that a central hospital authority for London be constituted, on which all branches of the medical profession are adequately represented." One suggestion made was that the principal sources from which the hospitals derive funds—the Saturday and Sunday hospital funds and King Edward's fund—should be amalgamated so that the supervision which they exercise over hospital administration and expenditure might be concentrated and increased.

The International Conference on Sleeping Sickness.

An international conference on sleeping sickness was held at the Foreign Office under the presidency of Lord Fitzmaurice. The countries represented were Germany, the Congo Free State, France, Great Britain, Portugal, the Sudan and Italy. Some very important decisions were arrived at. It was resolved that a permanent central bureau should be established in London and that each country represented should institute a national bureau. The duty of the central bureau will be to collect documents relating to sleeping sickness, to take the initiative with regard to all international questions arising in connection with the disease, to maintain communication with he different national bureaus, and to fix the place and date of future international conferences. It was decided to prepare a map showing the distribution of sleeping sickness and of the different species of flies in the different countries.

Lead Compounds in Yarn.

The government has issued a circular giving certain regulations to be observed in the process of "heading" yarn dyed by means of lead compounds. A periodical medical examination of the persons employed is established.

Novel Method of Dealing with the Problem of Infant Mortality.

Dr. English, health officer of the town of Swinton, in Yorkshire, has inaugurated a novel method of dealing with the problem of infant mortality—a system of house-to-house visiting and instruction of mothers in the principles of baby rearing. Such instruction has previously been given by paid health visitors, but the new feature of this scheme is that the visitors are voluntary and unpaid. After a public meeting in which the importance of breast feeding and the avoidance of alcohol by nursing mothers was enjoined, about twenty voluntary workers gave their names to the health officer. The town was divided into districts, of which each member was allotted one.

The Royal Society of Medicine.

A special meeting has been held of representatives of the principal medical societies for the purpose of receiving and adopting a royal charter incorporating 15 societies into a new body under the name of the Royal Society of Medicine—an intention previously reported in THE JOURNAL, March 9, 1907, 887. The Royal Medico-Chirurgical Society surrenders for the common good a valuable freehold and other assets amounting in value to nearly $300,000. Sir William Church was unanimously elected first president. The special work carried on by the different societies will now be carried on under better conditions by 12 sections, working under common government but autonomous in their special work. The united libraries of the societies will form a new library of nearly 80,000 volumes. The society begins with a membership of 4,000 and an income of $40,000.

VIENNA LETTER.

(*From our Regular Correspondent.*)

VIENNA, July 1, 1907.

Industrial Insurance.

Some time ago a commission was appointed to inquire into the conditions prevailing among industrial workers and the compensation obtained by these workers for incapacitation or disease due to their occupation. The sanitary conditions in most of the factories were found to be highly satisfactory. Legislation has been very keen in this respect and stringent provisions have been made and enforced to insure not only proper ventilation, etc., but also the employment of only healthy individuals. Weekly medical examination of all factory hands has been instituted in chemical factories, match factories and brass and iron works. In grinding establishments also and in mills and mines the law requires regular medical examination of the men employed. The physician is appointed and paid by the owner of the establishment. If the laborer is ill he has to keep away from his work; meanwhile his family receives the sick pay. Special attention has been paid to phosphorus necrosis occurring in match factories, and a delegate of the University of Vienna has studied the conditions prevailing in the match industry. He has found that the number of patients that have suffered from this complaint within the past ten years exceeds 400. All these individuals had been employed in making matches with yellow phosphorus, which is highly poisonous.

Alcohol Consumption and the Birth Rate.

The report of the past year's consumption of alcohol makes interesting reading when taken in conjunction with the vital statistics. It is seen that those classes of the population consuming the largest quantities of alcohol show also the largest decline in the birth rate. While the mean birth rate for the decade 1890-1900 was 35 per thousand, during the years 1900-1906 it fell to 32 per thousand. The greatest fall was found in those countries where the consumption of alcohol (not light wines, but beer, gin, whisky or cognac) has been increasing, especially in Galicia, Bohemia and the Alpine regions. In these localities the birth rate stands at from 24 to 25 per thousand. It is interesting to note, however, that in the wine-drinking countries (Tyrol and the Mediterranean provinces) the birth rate is fairly constantly 33 per thousand.

Therapeutics

[It is the purpose of this department to outline an up-to-date management of disease, to suggest scientific treatment for diseased conditions, and to present prescriptions that are simple, useful and palatable. Prescriptions are written in both the metric and apothecaries' systems, but the amounts of the ingredients are NOT exact translations of one system into the other, but quantities convenient for pharmacist and physician. It should be understood that solids are weighed in grams or fractions of grams, while liquids are measured in cubic centimeters; that a teaspoon holds five cubic centimeters, i. e., more than a fluid dram, hence a 100 cubic centimeter preparation will contain twenty doses.]

Hyperchlorhydria and Its Treatment.

There is considerable difference of opinion as to the frequency of this condition, and there is no question that a large number of patients with dyspepsia are treated without making the diagnosis between hyperchlorhydria, erosion and ulcer, and doubtless in the early stages of these conditions many cures are effected. But if the process chances to be a little further advanced and consequently fails to be relieved by this "anti-dyspeptic" treatment, the patient usually drifts from one physician to another until he finds one with the ability to make a diagnosis, following which he usually gets relief. That so many cases do yield to simple treatment without an accurate diagnosis being established coupled with the trouble and difficulty of making such a diagnosis, is doubtless the reason why the condition is not more frequently discovered.

Under the heading of this article Dr. L. M. Gompertz, New Haven, Conn., in the *Yale Medical Journal*, June, 1907, has the following to say:

"A distinction between hyperchlorhydria and acid gastritis can only be made by the finding of an abundance of mucus in the fasting stomach. This mucus must then be subjected to a microscopic examination to determine whether it had its origin from the upper air passages or in the stomach itself. If the symptoms are present as they appear in a text-book, the diagnosis can easily be made, but when one or many of

the important symptoms are absent, a correct and positive diagnosis can only be arrived at by a quantitative chemical examination of the stomach contents after a test breakfast."

He says that in uncomplicated cases the symptoms vary in their appearance with the amount and variety of food taken. From one-half to three hours after eating the feeling of pressure, fulness, and heartburn accompanied by a sour taste and a sensation of burning along the esophagus and in the stomach make their appearance. Headache, dizziness and insomnia are usually prominent. The appetite is good, and vomiting is not common. When, however, it does occur, it is followed by relief of the above symptoms. Frequently the amount of food taken is enormous. The bowels are generally constipated, though there may be a diarrhea.

The condition occurs in all walks of life, and while sex does not appear to be a factor, he finds that age apparently is, the majority of patients being in early middle and adult life, while a large majority of them are those living under nervous tension.

Sudden mental emotion, fright, worry, sorrow, overtaxing the brain and social excesses all tend to produce this condition, and Gompertz is so impressed with these latter factors as to believe that a neuropathic condition is the most important etiologic factor.

In erosion and ulcer there is an excess of hydrochloric acid, together with painful pressure points and vomiting. In hyperchlorhydria these symptoms are absent, though the entire stomach may be tender, and since he believes hyperchlorhydria, erosion and ulcer differ only in degree, and since the objective and subjective symptoms together with the physical examination frequently leave one at a loss for a diagnosis, the only rational procedure is the test breakfast followed by the subsequent chemical examination of the stomach contents, which in the majority of cases, in his opinion, will show an overproduction of gastric juice, i. e., hyperchlorhydria.

If the cooperation of the patient can be obtained, the treatment is very satisfactory.

If the causes are mental or emotional, they should, of course, be removed or corrected, as must be rapid or improper mastication of the food. As there is such a wide difference of opinion and considerable controversy concerning diet, he gives what has been most successful in his own cases.

"The albuminoids, especially meat, milk and eggs, should be given. These neutralize a larger portion of the acid than the starchy foods and are very much better borne. The eggs should be taken hard boiled. Fish is allowed. Plenty of water is given as this dilutes the acid and renders the patients more comfortable. Butter, creams and fats are usually well borne, as are cocoa and chocolate.

"The starchy foods, potatoes, cabbage and turnips, are forbidden, as are highly seasoned foods and the condiments.

"Alcoholic beverages and any amount of large, bulky foods are injurious, as being overstimulating to the gastric glands, as are strong coffee and tea. In fact, an easily digested, bland and non-stimulating diet is indicated in hyperchlorhydria. Whether frequent small meals or a larger amount of food taken at less frequent intervals is better in this condition, has received some attention, there being as many advocates for one method as for the other. According to my experience, full meals taken at less frequent intervals is much better, as the hydrochloric acid is secreted as soon as food enters the stomach, and if a large amount of food is present, the acid is better taken care of, being used up by the large amount of food present."

Electricity has been of value, and lavage may at times be useful, but usually, he thinks, the latter has been used altogether too much, and should only be resorted to in the most obstinate cases, when, if it does any good, the benefit is immediate. He regards the medicinal treatment as not less important than the diet. The underlying nervous condition should be treated and if necessary, tonics given. For lessening the secretion he finds belladonna the most useful drug, and alkalies are an important part of the treatment, as they relieve the pain and the sensation of pressure.

The belladonna may be given by any of the following methods:

R.	c.c.	
Tincturæ belladonnæ foliorum	25	ʒi

Signa: Ten drops (more accurately 0.25 c.c. or ¼ c.c.) or 5 minims, in water, three times a day, before meals. Or:

R.	gm.	
Extracti belladonnæ foliorum	20	gr. iii
Extracti gentianæ	2	gr. xxx

Misce et fac pilulas 20. Signa: Take a pill three times a day, before meals.

Or: A tablet containing one two-hundredth (1/200) of a grain of atropin sulphate may be given before each meal.

If a patient taking any of the above preparations of belladonna complains of a dry throat or inability to see well, the drug should be stopped.

Dr. Gompertz recommends the following prescription for antacid action, when constipation is present:

R.	gm.	
Sodii bicarbonatis	20	
Calcii carbonatis præcipitati	20	
Magnesii oxidi ponderosi	20	ää, ʒv

Misce et fac chartulas 20. Signa: Take a powder three times a day, after meals.

If diarrhea is present instead of constipation, bismuth subnitrate should be substituted for the magnesia, in the same dose, viz., one gram (15 grains).

Treatment of Local Infections.

Under the above heading, Henry S. Wieder, Philadelphia, in the *Therapeutic Gazette*, May, 1907, gives the best résumé on the management of minor infections that we have seen. Decrying the folly of waiting until an abscess or boil "points," thereby increasing the opportunity for further infection as well as prolonging the most painful period of the entire process, and calling attention to the fact that any kind of a poultice can do nothing but accentuate all the undesirable features of this waiting, he recommends what invariably gives the most immediate relief of pain, the quickest process of repair, and the surest preventive against secondary infection, viz: immediate incision over the point of greatest tenderness, no larger than necessary, but deep enough to allow some bleeding, and reaching if possible the focus of infection. The wound should be allowed to bleed as freely as it may, and then, whether or not pus be found, should be thoroughly swabbed out with phenol, lightly packed with gauze, and a wet bichlorid dressing applied. The patient is given tablets of bichlorid of mercury, instructed how to make a 1 to 1,000 solution, and told to use it as hot as he can bear it three times a day, soaking the affected part for a half-hour, without removing the dressing. In the majority of cases, if seen in time, this treatment is abortive, and when the patient appears next day all symptoms will be found improved. Should the process, however, have gone on to actual pus accumulation or to necrosis, the symptoms of inflammation will nevertheless be found lessened, and a continuation of the dressing is all that is needed. Occasionally, however, it will happen that the focus of infection was not reached by the primary incision, and when the patient appears the next day for treatment, although the inflammation will have greatly subsided and the pain have either disappeared or be markedly lessened, there will be found more or less discharge, purulent or otherwise. The use of the probe will then invariably indicate the seat of infection, either as an accumulation of pus or as the characteristic "core." If the former, it should be freely exposed, using scissors preferably; if the latter, it should be removed with

forceps, experience having proved the use of the curette inadvisable in these cases. Light packing and the repetition of the bichlorid dressing is then resumed. In contradistinction to the above Wieder uses a curette freely on a carbuncle after the usual crossed incision. Then the phenol swab is followed by alcohol and the wet bichlorid dressing is applied.

He closes his article with the following summary:

"1. Poultices, so-called antiphlogistics, etc., are useless in the treatment of local infections and do harm by causing greater destruction of tissue and delaying proper remedies.

"2. Immediate incision over the point of greatest tenderness should always be practiced, followed by carbolization of the wound to destroy the nidus of infection, and then a wet bichlorid dressing applied.

"3. Free incision with constant wet drainage should be the rule in the presence of pus.

"4. Dry drainage, especially when saturated with coagulative powders, is ineffectual and harmful because of the 'caking' that occurs on the surface, sealing the cavity.

"5. Cases, especially with drainage, should receive soakings with hot bichlorid solutions thrice daily. Hot salt solution or water may be used if the bichlorid appears too dangerous.

"6. Waxed paper should not be used over wet dressings, as it forms them into moist warm poultices, which are objectionable.

"7. Never curette infections primarily, excepting carbuncles, which should always be curetted and carbolized.

"8. Gauze selvage, when soaked in bichlorid solution, makes a conveniently handled and effectual packing.

"9. Palmar infections of the fingers and hands are more serious than dorsal infections.

"10. In incising for palmar infections of the fingers, continue the incision until pus or the bone is reached, and do it without delay."

Some surgeons claim that in treating carbuncles they have less pain, less trouble with the dressings, and a considerably shortened process by administering an anesthetic and freely excising the entire mass. While this often seems a radical procedure, we are convinced that it is the quickest method.

Pharmacology

PRECEPT VERSUS PRACTICE.

Remarks on the Alleged "Independence" of the So-Called Independent Medical Journals.

There has recently been much talk on the part of certain privately owned medical journals regarding their so-called "independence," as contrasted with the implied "dependence" of the journals owned and published by organizations of physicians. It is comparatively easy to make claims regarding this or any other attribute, but it is most interesting to know to what extent the principles advocated are carried out in practice.

The editor of the *Medical Council*, of Philadelphia, read a paper before the Medical Editors' Association, June 4, 1906, on "The Independent Medical Journal." An article on such a topic, written by the editor of a privately owned journal and read before such a body, may naturally be considered an authoritative utterance on the position of the "independent" editor. A few extracts may prove interesting:

> The world is every ready to listen to a man who has earnest convictions and is willing to risk everything in his bold endeavor to express them. Man's best work has ever been accomplished when, free from all restricting alliances, actuated by his own high sense of right and inspired by his love of truth and justice, he labors conscientiously and often self-sacrificingly for the cause of science, of art, of humanity. Thus working independently in his chosen field of activity, unfettered by official dictation or commercial interests, his work will have a power and influence of its own. Such work is as everlasting as the eternal hills. By the side of this, how puny and ephemeral appear the work of those who are the mere puppets of dictatorial masters, the fawning creatures of a fickle organization or the human machines of a great commercial enterprise.

Our colaborer then proceeds to contrast independent journals with journals published by medical societies, saying that the editor of a medical society journal "has no personal independence." He closes his address with an appeal to his hearers to "give our readers clean, scientific, practical and up-to-date literature. Let us allow none but respectable and reliable advertisements in our advertising pages. Let us be true creators and leaders." These are lofty sentiments and are, in every way, worthy of commendation.

Now, it would clearly be an injustice to the editor of the *Medical Council* to compare the principles which he has laid down with the practice of any other editor or even of his own practice before the reading of his paper. He certainly can not complain, however, if, a year after his eloquent address was delivered, a current number of his journal is taken as an evidence of the manner in which he has "risked everything in his bold endeavor" and "labored self-sacrificingly for the cause of humanity."

In the July number of the *Medical Council* appears a most striking example of what happens when the medical editor is "free from all restricting alliances, actuated only by his own high sense of right;" it is an article entitled "The Use of Antiseptic and Antifebrile Remedies in the Treatment of Typhoid Fever, Pneumonia and Other Infectious Diseases." This article, signed by S. Lewis Summers, M.D., Glenside, Pa., has nothing about it to distinguish it from any ordinary contribution by a practicing physician. The average reader would gather the impression that it is a report, from a physician actively engaged in the practice of medicine, of cases in his own experience in which he had actually used the two preparations mentioned. It is, however, an adroit advertisement of two preparations by the very man who makes them. In only a single paragraph is there any intimation whatever of the writer's relation to the preparations recommended, and even this would not be apparent to any one not already conversant with the facts. It would never be suspected from a casual perusal of the article that it was not written by a practicing physician, but was written by the president and principal member of the Organic Chemical Manufacturing Company, S. Lewis Summers, who usually gives his address as Philadelphia, but in this case seems to be located at Glenside.[1]

Now, strangely enough, the advertising pages of the July *Medical Council* contain three and a half pages of advertising matter of this company, two and a half pages of which are in the form of "reprints" setting forth the virtues of one of the preparations made by the Organic Chemical Company, one of the reprints being taken from the reading pages of the April *Medical Council*. It is no doubt a pure coincidence that the largely increased advertising of the Organic Chemical Manufacturing Company appears in the same number of the *Medical Council* that contains S. Lewis Summers' "clinical contribution," yet one is led to speculate as to whether the increased amount of advertising was in any way conditional on the article in the reading pages of the *Medical Council*.

Evidently the editor's lofty determination to "risk everything" did not apply to advertising contracts. We quite agree with the editor of the *Medical Council* that "man's best work has ever been accomplished when free from all restraining alliances," especially if by "best work" the editor means selling at advertising rates both advertising and reading pages. The question arises in this connection, however, as to who is being "worked." Is it the Organic Chemical Manufacturing Company or is it, possibly, the subscriber to the *Medical Council* who pays for original scientific articles and gets adroitly masked advertising write-ups? Is it not possible that in such a case some slight "restricting alliance" might be of benefit, both to the editor's ethics and to the subscribers of the *Medical Council*? Most appropriate, too, seem the glowing utterances of a year ago, especially when illuminated with a few slight interpolations to fit the occasion. "How puny and ephemeral seems the work of those who are the mere puppets of dictatorial masters [advertising managers, for instance], the fawning creatures of a fickle organization [does he mean the American Proprietary Association, we wonder?] or the human machines of a great commercial enterprise [such as the Organic Chemical

1. A report, just received from Glenside, Pa., gives the names of four practicing physicians located at that place. The name of S. Lewis Summers does not appear on the list.

Manufacturing Company and others)." The editor is right. These things do impress one as most "puny and ephemeral!"

Unfortunately, such instances as the above are not rare, although it is unusual for the manufacturer himself to assume the rôle of clinical reporter on his own products. Mark Sullivan's "Patent-Medicine Conspiracy Against the Freedom of the Press" finds its counterpart in medical journalism. The publisher, to get the contract, throws in so much space in the reading pages with or without the editor's consent; some one who can write M.D. after his name is found to write a pseudo-scientific article which extols the particular product; the editor winks, and the subscriber reads and believes—because he thinks the editor is honest and will give him a square deal.

It is not, as the editor of the *Medical Council* seems to think, a question of "independent" or "organization" journal, but it is one that involves the primal, simple question of common honesty, no matter who is the owner or editor.

Digalen.

The claims of Cloetta regarding digalen, sold in the form of a solution under the same name by Hoffmann-La Roche & Co., are controverted by Professor Kiliani in the *Muench. med. Wochschr.*, April 30, 1907. The claim of Cloetta that the action of digitalis is to be attributed to the action of digitoxin is also, he states, without foundation, since Windhaus has shown in a conclusive manner that digitalis leaves contain an active heart poison which is soluble in water, namely, digitalein. There is no experimental evidence that the composition of digitoxin and digalen is identical or that they furnish the same decomposition products. The claim of Cloetta that the molecules of digitoxin can be reduced to half their size by converting them into the amorphous condition is preposterous. If such a change occurred, Kiliani declares, we would expect to find distinct chemical substances with distinct physiologic actions. In Kiliani's opinion, digalen (referring to the dry substance before solution), is nothing more than a mixture containing a high percentage of digitalein and which may be prepared by the process published by Windhaus and Kiliani. Certainly Cloetta has offered no evidence to show the relation of digalen to the well characterized digitoxin nor has he even demonstrated that digalen is a definite chemical substance.

Correspondence

Misuse of Term Vaccination in Opsonotherapy.

PHILADELPHIA, July 12, 1907.

To the Editor:—In the publication of articles on opsonotherapy the terms "vaccine" and "vaccination" are frequently appearing. They have doubtless been employed as convenient designations to indicate a degree of parallelism between the action of vaccination and bacterial inoculations. It is obvious, however, that the analogy is only partial. In vaccination a living parasite is introduced which produces a benign, modified smallpox. The bacterial inoculations on the other hand introduce toxins which, if present theories be true, sensitize the bacteria in the body and render them ready victims for phagocytosis.

There are stronger reasons than the above for the discontinuance of the use of the words "vaccine" and "vaccination" in this connection. Through a century of usage these terms have been firmly established in the medical and lay mind as related to a prophylactic measure against smallpox. The popular comprehension of "vaccination" is clear cut and concrete, and to confuse it by applying the term to various immunizing inoculations is unfortunate. Antivaccinationists will unwittingly or wittingly take advantage of the confusion of terms and turn it to their advantage. I recently read an article in which the words "vaccination" and "revaccination" were employed for bacterial injections, and the perusal of an entire paragraph did not enlighten one as to whether Jennerian vaccination was referred to or not; indeed, it becomes necessary now to qualify vaccination by saying "Jennerian vaccination."

From an etymologic viewpoint, vaccination can only refer to a subject related to the bovine species, the word being derived from *vacca*, a cow. The first lymph used by Jenner was primarily of cow origin, therefore, the name. The terms ovination and equination have been employed when lymph from sheep and horses has been used.

It is not alone undesirable to thus employ the term "vaccination," but it is unnecessary. Certainly some appropriate terminology can be created if it does not already exist. In Dr. S. Solis-Cohen's "System of Physiological Therapeutics," in an article by Dr. Joseph McFarland, the terms bacterin, bacterinate, and bacterination appear. These would seem to answer the purpose.

JAY FRANK SCHAMBERG.

The Physiologic Effects of Light.

GUTHRIE, OKLA., July 7, 1907.

To the Editor:—Your editorial on the above subject in which you refer to the effects of light on blonds and brunettes, is the cause of my writing the following:

Many reasons have been advanced to account for the large number of deaths from consumption among blacks and other dark-skinned races; all of which reasons contain their quota of truth, but are as applicable to white races also; I believe, though, that the true reason has never been stated, that is, that the excessive mortuary rate per cent. is due to the deep pigmentation of their skin. The investigations as to the therapeutic and physiologic action of light, made in recent years, if logically studied, can lead to no other conclusion.

Finsen claimed that the actinic (blue) rays in sunlight are inimical to the life and growth of the tubercle bacilli. It has been acknowledged the blue rays are the rays that are most beneficial in the light treatment of pulmonary tuberculosis. Dr. Woodruff states that in health the deeply pigmented races best withstand the injurious effects of sunlight; ergo, in disease the deeply pigmented races would least receive the beneficial effects of sunlight. Finsen's experiments, and the experiments of others since, have proved that black is the color that most prevents the ingress of blue and other therapeutic rays.

These premises being true (and I think that they are generally accepted), it follows that the more deeply pigmented the skin the graver the prognosis in a case of pulmonary tuberculosis. It has been demonstrated by postmortem dissections that hundreds of individuals who finally died from other than pulmonary troubles had had at some period of their lives attacks of pulmonary tuberculosis from which they have recovered. Postmortem statistics gathered along this line will show that a very small per cent. of those so recovering were deeply pigmented individuals.

The true black who once acquires pulmonary tuberculosis rarely recovers, but steadily and rapidly fades away. This does not mean that negroes are more susceptible to tubercular troubles (their immunity when living an active out-of-door life in ante-bellum days proves that) but that, once having acquired the disease, the deep pigmentation of their skin prevents them from receiving the beneficial action of the actinic rays, existing in all sunlight, that lighter skinned races receive.

H. W. CONRAD, M.D.

Leslie's Weekly's Partnership with Fraud.

MEMPHIS, TENN., July 11, 1907.

To the Editor:—Your editorial entitled "Accomplice or Dupe," on page 48 of THE JOURNAL, July 6, in which you call attention to the elaborate notice given in *Leslie's Weekly* of the opening of a so-called hospital for the treatment of cancer by the Alexander method, should be supplemented with a notice of the fact that this periodical is prone to such offenses. About eighteen months ago an article was published under the heading "Is Blindness on the Increase," or something to that effect. The medical eye was at once attracted, and my disgust may be imagined when the thing proved to be an advertisement of the "cele-brated specialist," Dr. Oren Oneal. This article occupied a full page ordinarily devoted to reading matter, and was evidently intended to be taken for reading matter. Though a reader of *Leslie's* for several years, I at once dropped it, and while I do not see that the loss of my patronage has keenly hurt the periodical, I can never again be a reader of it, especially when I learn of this new offense.

E. C. ELLETT.

Miscellany

Collier's on Viavi.—That ingenious and widespread fake, the "Viavi" system of "curing" disease, came in for a vigorous harrowing recently at the hands of the *California State Journal of Medicine*. Now, it has been the distinction of "Viavi," that it does not advertise in the papers, but spreads its fraudulent doctrines among womankind, by "lectures," "addresses," and a system of personal visits by "Viavi" representatives, who, to a lay mind, appear to be practicing medicine without a license, since they prescribe "Viavi" medicines or "Viavi" treatment for pretty much everything from heart disease to freckles. On the publication of the medical journal's article, however, a change came o'er the spirit of the "Viavi" dream. The Law Brothers, proprietors of "Viavi," who have grown rich and influential from the money of their dupes, live in San Francisco, where the *California State Journal of Medicine* is published. Their feelings were harrowed, particularly as one daily newspaper, and one weekly in their own city, gave some space to the attack on their business. Immediately they rushed into print. To reply to the attack? To refute the charges? Not at all. It was not that kind of print. Their method was to buy advertising space, and insert huge advertisements in all the local papers. Result: A complete silence thereafter, as regards the "Viavi" matter, except that the offending daily which had already referred to the medical article printed later a pleasant and complimentary little "write-up" about the Laws and their enterprise. Yet, we presume, the Laws would indignantly deny that they had bribed the newspapers into silence, and the newspapers would even more indignantly deny having been bribed. We can swallow a coincidence as raw as any one else, but the coincidence of a concern that hasn't advertised for years, suddenly flaming into print at a considerable outlay, immediately following an attack on its methods, is too great a tax on our faith. Long since the Proprietary Association of America has shown the inner workings of that method. "Viavi" has merely adapted the "Red Clause" method to its own needs.—*Collier's Weekly*, July 13.

Military Hygiene in Public Schools.—Col. John Van R. Hoff, medical department U. S. Army, in the Seaman prize essay, which appeared in recent issues of the *Journal of the Military Science Institution*, makes the suggestion that the American Red Cross exert its influence to have the elements of military hygiene taught to boys in the public schools. He states that this could be done easily in connection with the teaching of the popular so-called "physiology." Colonel Hoff's reasons for suggesting this are not only that some of the boys will be the members of the volunteer army a few years hence, should necessity for military service arise, but also that the knowledge of personal hygiene and of the general principles of military hygiene would be of great use to them in any case. Colonel Hoff says: "It would not add much to the course nor take much time; neither would it make any intellectual demand beyond that which could be met by an average student. It would emphasize the dangers of bad food and water, it would teach the boy how to care for himself in the field, what to do and what to avoid, and it would give him rules for right living under the stress of campaign and the reasons therefor. Not very much, indeed, but enough to impress him with the fact that there is such a thing as military hygiene, and that some knowledge of it would be of importance to him under certain circumstances. Then, when all the boys have learned this fact, a great step toward the prevention of camp diseases will have been made. Simultaneously our colleges and universities should be asked to give recognition in their curricula to this subject. Particularly should this be so in our medical schools, and an adequate knowledge of military hygiene should be made obligatory not only for the degree in medicine, but in the state license to practice medicine as well. All this, it seems to me, is a legitimate part of the mission of the Red Cross, and through its instrumentality, more than any other, can we hope to see the people of the United States educated to appreciate the necessity of a universal recognition and study of military hygiene."

Oriental Rugs and Transmission of Disease.—P. Remlinger is director of the Pasteur Institute at Constantinople, and he raises a warning voice in regard to the pathogenic possibilities of oriental rugs. He says that these rugs can be said never to be bought new and they are so durable that they never wear out, and they increase in value as time mellows the colors. The mellowing of the colors is hastened in various ways, he relates, sometimes by washing or dipping in a mixture of water and alcohol or water and potassium hypochlorite, but in the Caucasus and in Persia the rugs are placed in a pit and covered with pulverized horse, sheep and other manure. When removed a few days later the colors are mellowed as if by age, but a nauseous brown powder clings to them for a long time and may never be entirely removed. In the wholesale houses the rugs are mellowed by spreading them on the floor, where there is most walking and the workmen sit and lie on them. The European bed is almost unknown in the Orient. At night a thin mattress is laid on the floor or low divan, covered with rugs, and the individual partly undresses and sleeps under a few coverings; the poor simply roll themselves up in a rug and sleep on the floor without undressing. No change is made in these customs when any one is sick, and the rugs catch the sputa, urine and sweat of the persons sleeping on them. The texture of the rugs favors the taking up and retaining of infectious matters as a sponge takes up water. The wealthy have several layers of rugs on the floor, and the walls are hung with them, with especially handsome ones over the others. They are handed down from generation to generation as priceless heirlooms and articles de luxe. Numerous peddlers travel around the country picking up a rug here and there as death or need of money forces the sale of one. These peddlers travel around sometimes for months before they accumulate a stock to take to the wholesale dealer. In the meanwhile they sleep every night wrapped up in their rugs, thus protecting them against being stolen. In the wholesale house the rugs are piled on top of each other in rooms purposely kept dark. When an amateur wishes to purchase a rug the attendants remove them from the pile, piling them up again in inverse order, and the clouds of dust that accompany the procedure testify to the previous peregrinations of the rugs. Pneumonia, bronchial asthma and tuberculosis are exceptionally prevalent among persons who have anything to do with the wholesale rug trade, from the humblest workman to the rich proprietor. Remlinger adds that the vacuum cleaning method will find its most interesting application in cleaning oriental rugs. The rugs wash perfectly, with the exception of the Djim Djim jute rug and certain Smyrna rugs which are made in aniline dyes. It might be possible to find some antiseptic to add to the washing water that would not injure the fabric. Disinfection by heat does not injure the rugs, either silk or wool, except those mentioned above, but exposure to 120 C. (248 F.) might restore the original brilliancy of the colors. The dangers of infection from oriental rugs was illustrated by a recent experience at Paris. Several cases of tropical dysentery developed in a Paris family, with two deaths. The physician traced the infection to some recently acquired oriental rugs. Remlinger's communication is published in *Hygiène Générale et Appliquée*, page 257, 1907.

Intermittent Claudication.—In a supplement to the *Med. Klinik*, iii, 20, 1907, R. Bing reviews the present status of our knowledge of the three forms of this affection, viz.: 1. The arteriosclerotic form, intermittent lameness resulting from disease of an artery and the similar intermittent weakness of the arm muscles—dysbasia or dyspraxia angiosclerotica intermittens. 2. Intermittent lameness as a vasomotor neurosis. 3. Intermittent lameness as a symptom of a spinal affection. He discusses the history and the differentation, especially from pseudoparalytic myasthenia, neurasthenic dysbasia, certain cases of sciatica and neuritis, "akinesia algera"—autosuggested pains after attempts to walk, etc., and tarsalgia or metatarsalgia. Treatment of intermittent claudication should aim first to remove the cause and next to forbid the various exaggerated therapeutic measures, hot baths, long walks, etc., which the patient has generally been trying. The diet should exclude all substances which have an energetic action on the

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vasomotors, strong coffee, tea, condiments, ergot, digitalis, etc. The feet should be kept constantly warm. The underlying trouble is an endarteritic process, and medication and dieting to combat this tendency and the arteriosclerosis in general should be vigorously pushed. Erb advises oiling and gentle massage of the feet to act on the local vessel affection, but Zoege von Manteuffel prefers massage of the rest of the body, instead, for revulsion. The tendency to spasm of the vessels should be combated with warmth, not heat. Galvanic foot-baths have proved useful. Besides the vasodilating drugs, nitrite, nitroglycerin, quinin and other antipyretics, heart tonics are indicated, aiming to regulate the general and collateral circulation; strophanthus is to be preferred to digitalis. Baths to dilate the vessels will also prove useful. Surgical intervention has been recommended by some, in analogy to the experiences with perforating ulcer; the posterior tibialis can be exposed for 2 cm. on the inside of the ankle, and stretched, or Jaboulay's technic can be followed. This consists in exposing the femoral artery in the inguinal triangle, removing its sheath and thus destroying the sympathetic nerve fibers of the vessel, running along the artery. Jaboulay and Rhenter have reported excellent results from this operation in cases of perforating ulcer, and it seems theoretically indicated in intermittent claudication, although it has never yet been tried in the clinic for this affection. Symptomatic measures may be required, sedatives in case of pain, and restriction of the use of the limbs. Charcot used to keep his patients with this affection constantly reclining, sometimes for months, until material improvement was realized, and then gradually allowed them to exercise, a little at a time, watch in hand. A patient of Erb's succeeded in this way in improving his condition so that he could walk for more than four hours at a time and could have done more if it had not been for Erb's veto. It is important also to refrain scrupulously from every chance of contusion or scratch. Every inflammation, corn or pimple should be carefully treated with rest, position, disinfection and antiseptic dressings to prevent development of phlegmonous or gangrenous processes. The above measures may and do frequently improve the intermittent lameness to a point equivalent to a cure, but in some cases the affection persists unmodified. Mercury should always be given a trial in the spinal form. In conclusion Bing suggests that possibly writer's cramp, when the hand is cold and livid, may be a manifestation of this arteriosclerotic dyspraxia.

Patent Medicines and the Pulpit—A Sermon.

It is well known that ministers of the gospel are easy marks for the "patent medicine" men, and not a few of the testimonials and endorsements for quack medicines are furnished by them. Recently, however, there has been a change and clergymen are awakening to their responsibility in the movement against the great American fraud. Religious papers are being forced by their readers, especially by the ministers, to purify their advertising pages, and not a few sermons have been preached on the subject. We have been favored with a copy of one such sermon preached by the Rev. Marcellus B. Fuller of Dayton, Ohio, June 23. Dr. Howell of Dayton, who has kindly furnished us the manuscript, says that the auditorium in which the sermon was preached was packed. We regret that we can only give space to the following:

"The great gilded fraud of this day is the nostrum evil and quackery. Why is it tolerated? It is so heavily gilded that men often fail to see the hideous worm under the coats of paint. See how 'appetite' finds this evil and how the evil cultures the appetite. The old saw of Barnum, 'The American people love to be humbugged,' has a final proof here. Note the rich field the unprincipled practitioner has to work. 'A dying man will catch at a straw,' and humanity is never so credulous and 'easy' as when it is suffering. This appetite is whetted by the very thing that affords satisfaction. The alcohol fiends, made so by preparations of the peruna type, are so many as to defy enumeration, while the drug victims form a vast procession. Most tonics are alcohol stimulants. Catarrh powders breed cocain slaves. Soothing syrups stunt or kill infants with their opium. Headache powders with their acetanilid stop heart action. Nearly all of these preparations are of the nature of stimulants requiring increasingly large potions, until, to produce the original excitation, the system fails under the awful stress.

"Ambition puts on its coat of gilding. Do you want to live a long time? Use Duffy's pure malt whisky. Nearly every nonogenarian, if the press reports may be accepted, owes his longevity to this delicious beverage. Distinguished divines and temperance workers, who have spent their lives in uplifting their fallen brethren and placing their feet on the solid rock, are outspoken in their declaration of favor.

"Some regard ought to be given the suffering public compelled to gaze on the visage of the 'before and after' of some Hoodwink's sarsaparilla. We are admonished daily that 'women are modest.' They require absent treatment. Their communications will be held as sacredly confidential. How can a modest woman endure the exploitations of ills that would make a sphinx blush? Alluring letters are written—the regular price, $100, reduced to $30 because of special interest, etc. Who has not received such letters? How many have swallowed the bait?

"How many of the vendors of these poisons in the drug stores deserve merciless excoriation? This fraudulent business constitutes about two-thirds of the average small store.

"But the American press is the prime exploiter of this evil. Avarice seems to be the ruling cause. About $40,000,000 are spent annually in newspaper advertising. A Lydia Pinkham representative declares their monthly expenditure is $100,000. Proprietors and quacks estimate that 90 per cent. of their business is due to the newspaper advertising and to this prostitution of the religious press in the insertion of objectionable advertisements. It is a shame that there should be the occasion for reproach. Editors and advertising managers deserve stinging censure for their inexcusable laxity. We believe this fraud should be ceaselessly antagonized. It is opposed to the common standards of morality.

"Truthfulness is one of the safeguards of the nation. The nostrum evil is based on unadulterated falsehood. These nostrums do more than they promise. The laxatives become a terrible necessity. Headache powders with acetanilid cure heartache, too.

"Their effrontery is so unblushing, it amounts to a positive insult to the intelligence of the public. How can one believe such unqualified statements? 'I can cure cancer without pain, plaster or operation' 'Deafness cured.' 'Fits stopped free.' 'Consumption and catarrh cured—FREE.' These frauds are the world's monumental liars.

"This nostrum evil is a violation of purity. Purity is character. These advertisements demoralize. They do take the bloom of innocence. They do break down the line between the sexes. They do play fast and loose in their so-called manhood business. It is not possible for a decent man to read completely in his home, where his wife, daughters and sons are gathered, the regular ads of Swift's sure specific, Lydia Pinkham's highly corporeal letters, the Chattanooga Medical Company's announcements, with woman's friend and wine of Cardui, to say nothing of the boldest words that abound in published testimonials of all sorts of nostrums. How can we antagonize this evil? We can at any cost be unceasing in exposure. Take off the glittering scales and you will find the caterpillar, filthy, loathsome, the abominable thing. Let us call things by their right names. All these frauds are formed of sin. Ignorance is a large stock in trade of most of these charlatans. We can unitedly oppose this iniquity. Parents can aid by informing children of perils in their path. Teachers have an opportunity few possess. Ministers are public servants. Editors are notoriously recreant. Thus far physicians have done most in antagonizing this evil. We assert their unselfishness in this crusade. Thank God for the decent doctors. Why not idolize the doctors some? We can cry out against this thing with righteous indignation.

"Righteous men flame in hot wrath against vile sin. Is strong drink an evil? Who doubts it as he thinks of fathers turned into fiends, mothers into monsters, sons into sots, daughters into debauchers and cities into houses of the dead? Bitters, sarsaparillas and tonics are drunkard makers. Is the

drug habit an evil? Is it safe for the informed to use indiscriminately the various narcotics and cough remedies, soothing syrups and catarrh powders? Is lying an evil? What truths do these fakirs enunciate? Their whole system is a fabrication of falsehood. Is impurity an evil? The nasty nostrums daily exploited will either nauseate the stomach or putrify the soul. Is blackmail an evil? Get in the clutches of some manhood shark and see the price you pay. Is commercialism an evil? The press of this country, with few exceptions, can be charged with permitting its advertising columns to be prostituted to the vilest purpose. Is theft an evil? The Chicago *Tribune*, in writing about one Thompson, says: 'Three years ago he was a strong man. Now, because of a catarrh cure, he is without money, health, home or friends.' This announces the record of many."

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

Legislative Work in Texas.

During the session of the legislature of Texas a new medical practice act, approved by the State Medical Association, passed the legislature and was signed by the governor. The organized profession of the state worked systematically and persistently for the adoption of this bill. In the June number of the *Texas State Journal of Medicine* Dr. I. C. Chase, secretary and editor, says editorially:

The report of the legislative committee shows that somewhat less than sixty members of the State Medical Association this year visited Austin in the interest of medical legislation. The trustees paid $600 out of the association treasury to meet the expenses of the committee for legislative assistants. Some of the members of this committee, as well as the auxiliary legislative committee and individual members, left their homes and went to Austin whenever necessity presented itself. Some who were individually unable expended considerable sums. The mention of these facts at a joint meeting of the house of delegates and the scientific body brought forth an overwhelming sentiment that those who stayed at home should at least be given the opportunity to pay the actual expense incurred by those who left their personal work to take up the labor for the good of all. The committee appointed to consider the best means of accomplishing this end referred the matter to the trustees. As soon as the amount can be ascertained the trustees will consider notifying county societies of their share proportional to membership. Societies should consider this a voluntary subscription, none of the parties interested made their expenditures expecting a refund of expenses, and do not wish to be placed in the attitude of requesting reimbursement for their voluntary contribution to the advancement of state medicine. A large number have refused to accept payment for their expenses.

This spirit on the part of the working members of the State Medical Association of Texas is highly commendable. When the members of our profession are so interested in securing better legislation and better professional and social conditions and are willing to give of their time and money to secure these results, there will be no doubt as to the outcome. There is not a state in the union in which the physicians can not secure the passage of any sanitary act or medical practice law which they may wish, if they will really try to secure its passage.

New Laws in Wisconsin.

Some good bills, which we abstract below, have become laws, having been passed by the legislature of Wisconsin and signed by the governor. Copies were sent us by Dr. J. V. Stevens, secretary of the State Board of Medical Examiners of Wisconsin, who writes:

We feel that these new laws will greatly assist us in elevating the standard of the practice of medicine in this state, purifying the newspaper columns, protecting the people and making it easier for us to punish the charlatans and evil-minded men who rob the public under the guise of medical practitioners by their false and suggestively immoral advertisements. We hope that the other states will secure the same kind of legislation as soon as possible. We are selfishly interested in having them do so because papers that are published in adjoining states have a large circulation in Wisconsin and their publishers are not amenable to our laws.

Our midwife bill was killed by the opposition of a few physicians in the state. It passed the senate unanimously and was given a majority report by the committee on public health. One dissenting member of the committee defeated it by precipitating a vote when but few of the members were present. It is hoped that this bill will be passed at the next session of the legislature.

The first bill is one prohibiting the advertising of the treatment of venereal and sexual diseases, and creates a new section in the statutes, as follows:

1. Any person who shall advertise in any manner, either in his own name or under the name of another person, firm or pretended firm, association, corporation or pretended corporation, in any newspaper, pamphlet, circular or other written or printed paper, the treatment and curing of venereal diseases and of private diseases or diseases peculiar to men or to women, the restoration of "lost manhood," or who shall advertise in any manner that he is a specialist in diseases of the sexual organs or diseases caused by sexual weakness, self-abuse or excessive indulgence or in any diseases of a like nature or produced by like causes, or who shall advertise in any manner any medicine, drug, compound or any means whatever whereby sexual and venereal or urinary diseases of men and women may be cured or relieved or the monthly periods of women regulated or the menses re-established if suppressed, and the owner, publisher, editor or manager of any newspaper who shall publish any such advertisement or permit or allow any such advertisement to be inserted and published in any newspaper controlled by him or in which he has an interest, shall be guilty of a misdemeanor and on conviction thereof shall be punished by a fine of not less than $50 nor more than $500, or by imprisonment in the county jail not more than six months, or by both such fine and imprisonment.

2. Nothing in this act contained shall be construed as prohibiting and punishing the printing, publication and distribution of medical journals, papers, pamphlets and circulars intended for scientific and professional information.

The second bill is an amendment to the medical practice act of the state, defining the words "immoral, dishonorable and unprofessional conduct" as follows:

First, producing, aiding or abetting a criminal abortion. Second, advertising in any manner either in his own name or under the name of another person, firm or pretended firm, corporation or pretended corporation, in any newspaper, pamphlet, circular, or other written or printed paper or document, the curing of venereal diseases, the restoration of "lost manhood," the treatment and curing of private diseases peculiar to men or women, or the advertising or holding himself out to the public in any manner as a specialist in diseases of the sexual organs, or diseases caused by sexual weakness, self-abuse or excessive indulgences, or in any diseases of a like nature or produced by a like cause, or the advertising of any medicine or any means whatever whereby the monthly periods of women can be regulated or the menses re-established, if suppressed, or being employed in the service of any firm or person or pretended firm, association, corporation or pretended corporation, so advertising. Third, the obtaining of any fee, or offering to accept a fee on the assurance or promise that a manifestly incurable disease can be or will be permanently cured. Fourth, wilfully betraying a professional secret. Fifth, indulging in the drug habit. Sixth, conviction of any offense involving moral turpitude.

This definition enables the State Board of Medical Examiners to revoke licenses issued to physicians who are subsequently guilty of unprofessional conduct.

The provisions of the third bill, which amends the practice of medicine, read as follows:

1. Every person shall be regarded as practicing medicine, surgery or osteopathy within the meaning of this act who shall append to his or her name the words or letters "Doctor," "Dr.," "Professor," "Prof.," "M. D.," "M. B.," or "D. O.," or any other title, letters, combination of letters or designation which in any way represents him or her, or may tend to represent him or her, as engaged in the practice of medicine, surgery, osteopathy, in any of its branches, or who shall for a fee prescribe or recommend or for any compensation of any kind or nature whatsoever for like use any drugs or medicine, osteopathic manipulation, appliance, operation, or treatment of whatever nature, for the care or relief of any wound, fracture, bodily injury, infirmity or disease, provided however, that nothing in this act contained shall be construed as applying to any dentist or resident refracting optician engaged in the practice of his or her profession.

2. The use of any of the above-mentioned words or letters or titles, in such connection, and under such circumstances as to induce the belief, or tending to indulge the belief, that the person who uses them is engaged in the practice of medicine, or surgery or osteopathy in any of its branches, shall be deemed and accepted as prima facie proof of an intent on the part of such person to represent himself or herself as engaged in the practice of medicine, or surgery or osteopathy.

These three acts greatly strengthen the position of the medical profession in the state and give the state board the necessary legal authority to purify the profession and to carry out the purposes of the medical practice act.

Queries and Minor Notes

PROGNOSIS IN SYPHILIS.

——, July 8, 1907.

To the Editor:—Is any physician justified in telling a patient that syphilis can be cured in six months? What is the fairest statement of facts to make to the syphilitic about a case? S. T.

ANSWER.—The statement quoted is contrary to the experience and advice of the best authorities. Treatment should be continued, on the average, for three years. Some advise periodic courses of treatment for eight or ten years. The patient should be informed that the disease is curable, in some cases, but that in many cases its manifestations are continued for many years or appear again after the cessation of symptoms and after a thorough course of treatment has given reason to believe that a cure has been effected. On the other hand, the symptoms may disappear completely and permanently after a course of a few months, during which the symptoms may have been very mild. The patient should be warned to consult a physician immediately on the reappearance of symptoms, and of his own accord, to inform his physician of the fact that he has had a syphilitic infection, no matter what the disease for which he may be applying for treatment.

OPSONIC THERAPY IN TUBERCULOSIS.

——, July 1, 1907.

To the Editor:—Will you kindly give the "opsonic" treatment for tuberculosis? H. K.

ANSWER.—Our correspondent uses the term somewhat loosely when he speaks of the "opsonic" treatment for tuberculosis. It does not means that opsonins are used as remedial agents, but that the opsonic index is used as a guide in the treatment of disease by various agents. It may be so used to determine whether the time is appropriate for surgical intervention, or whether any remedy is effecting an increase of systemic resisting power which is the chief object of hygienic, open-air, dietetic and other methods of treatment. Most usually by the term "opsonic treatment" in tuberculosis is understood the use of tuberculin guided by the evidence of improvement afforded by the determination of the opsonic index. Formerly tuberculin was used in such a way that it produced a more or less violent reaction, and if the doses were repeated too frequently it did more harm than good. Now it is recognized that after the administration of a dose too small to give the classical "reaction" a stage of lowered resistance as indicated by lowered opsonic index is exhibited and continues a variable length of time, followed by a stage in which the higher opsonic index shows that the vital resistance is increased. If the vaccine (tuberculin) be given in a second dose before the index has risen, harm instead of good will be done. If, however, the operator waits until the opsonic index has risen above its former level before giving a second injection a progressive increase of vital resistance can be brought about which is accompanied by local and general improvement. Among the articles giving the technic of the tuberculin treatment may be mentioned those of Wright, *Lancet*, Dec. 2, 1905; *Canadian Practitioner*, November, 1906; Trudeau, *Am. Jour. Med. Sci.*, August, 1906; Pottenger, THE JOURNAL, A. M. A., May 11, 1907; O. H. Brown, *St. Louis Medical Review*, May 25, 1907, Grace Calvert, *Lancet*, Feb. 2, 1907.

TINCTURE OF ARTIFICIAL MUSK.

ST. LOUIS, July 9, 1907.

To the Editor:—Can you tell me the formula, dose and action of the tincture of artificial musk? I fail to find any information about it. Yours truly, Y. ZAKI.

ANSWER:—Artificial musk (trinitro-isobutyl-toluene) is a resinous compound prepared from toluene and soluble in alcohol. It has a musk-like odor and is used as a perfume. We can find no formula for a tincture for medicinal use, no account of its being used in medicine, and no data for making any statements regarding its physiologic action.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending July 13, 1907:

Heysinger, J. D., asst.-surgeon, granted leave of absence for two months, with permission to apply for an extension of one month.

Boards of medical officers as hereinafter constituted are appointed to meet July 29, 1907, at the places designated, for the purpose of conducting the preliminary examination of applicants for appointment in the Medical Department of the Army:

Webb, W. D., Pipes, H. F., and Huggins, J. B., asst.-surgeons, at the Army General Hospital, Washington Barracks, D. C.

Raymond, H. I., surgeon, Ruffner, E. L., and Metcalfe, R. F., asst.-surgeons, at Columbus Barracks, Ohio.

Bradley, A. E., surgeon, Gregory, J. C., and Pyles, W. L., asst.-surgeons, at Fort Leavenworth, Kans.

Richard, Chas., surgeon, and Shimer, I. A., asst.-surgeon, at Fort Jay, N. Y.

Hallock, H. M., surgeon, at Madison Barracks, N. Y.

Hansell, H. S., asst.-surgeon, at Fort Snelling, Minn.

Shockley, M. A. W., asst.-surgeon, at Fort Wright, Wash.

Whaley, A. M., asst.-surgeon, at Fort Sam Houston, Texas.

Scott, G. H., asst.-surgeon, at Fort Logan, Colo.

Ewing, C. R., surgeon, relieved from duty in the Philippines Division, to take effect at such time as will enable him to comply with this order, and will proceed on the transport to sail from Manila about September 15, to San Francisco, thence to Fort Oglethorpe, Ga., for duty.

De Loffre, S. M., asst.-surgeon, will report in person on Sept. 2, 1907, to Major R. G. Ebert, surgeon, president, examining board, Manila, P. I., for examination for advancement.

Ekwurzel, G. M., asst.-surgeon, granted leave of absence for one month and twenty-five days.

Howell, Park, Craig, C. F., Wickline, W. A., Brown, H. L., Baily, H. H., and Humphreys, H. G., asst.-surgeons, are relieved from duty in the Philippines Division, and will proceed on the transport to sail from Manila about September 15, to San Francisco, and on arrival report by telegraph to the Adjutant General of the Army for further orders.

Wall, F. M., contract surgeon, returned to duty at Fort Oglethorpe, Ga., from sick leave of absence.

Van Kirk, H. H., contract surgeon, returned to duty at Fort Logan, Colo., from leave of absence.

Koyle, F. T., Langenderfer, F. V., McPheeters, S. B., Myers, W. H., McLeod, H. C., contract surgeons, and Ingalls, R. E., dental surgeon, sailed on the *Sherman*, July 5, from San Francisco, for Philippine service.

Cook, G. W., contract surgeon, granted leave of absence for one month.

Voorhies, H. G., dental surgeon, granted an extension of one month to his leave of absence.

Oliver, R. T., examining and supervising dental surgeon, detailed to represent the dental surgeons of the Army at the meeting of the National Dental Association at Minneapolis, July 30 to August 2.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended July 10, 1907:

Glennan, A. H., asst. surgeon general, granted leave of absence for 22 days from July 19, 1907.

Banks, C. E., surgeon, granted extension leave of absence for one month from June 20, 1907.

Brooks, S. D., surgeon, directed to proceed to the sub ports of Los Angeles for the purpose of inspecting vessels when necessary, on completion of which to rejoin his station.

Carrington, P. M., surgeon, granted leave of absence for two days from July 9, 1907, under Paragraph 189, Service Regulations.

McMullen, John, P. A. surgeon, granted leave of absence for seven days from July 5, 1907, under Paragraph 191, Service Regulations.

McMullen, John, P. A. surgeon, granted seven days' extension leave of absence.

Currie, D. H., P. A. surgeon, leave of absence granted for two months from June 9, 1907, amended to read for 13 days only.

Ward, W. K., asst.-surgeon, granted extension leave of absence for seven days, from July 5, 1907.

Hunt, Reid, Chief Division Hygienic Laboratory, designated to attend triennial meeting of the international Physiologic Congress, at Heidelberg, Aug. 12-17, 1907.

Schwartz, L., acting asst.-surgeon, granted leave of absence for two days on account of sickness, from June 28, 1907.

Williamson, S. D., acting asst.-surgeon, granted leave of absence for twelve days, from July 8, 1907.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the surgeon-general, Public Health and Marine-Hospital Service, during the week ended July 12, 1907:

SMALLPOX—UNITED STATES.

Illinois: Chicago, June 29-July 6, 2 cases; Galesburg, June 22-29, 1 case.

Indiana: Indianapolis, June 23-30, 1 case; Lafayette, June 29-July 1, 2 cases; Marion, June 1-30, 1 case; South Bend, June 22-29, 2 cases.

Iowa: Cedar Rapids, June 1-30, 2 cases; Davenport, June 16-30, 2 cases.

Kansas: Kansas City, June 22-29, 3 cases.

Louisiana: New Orleans, June 22-29, 4 cases.

Mississippi: Gulf Quarantine, May 1-31, 1 case.

Missouri: St. Joseph, June 1-8, 2 cases; June 22-29, 2 cases.

New Jersey: Newark, June 29-July 6, 1 case.

New York: New York, June 22-29, 1 death.

North Carolina: Greensboro, June 22-29, 1 case.

Ohio: Cincinnati, June 28-July 5, 2 cases; Cleveland, June 21-28, 4 cases.

Pennsylvania: Homestead, June 1-14, 1 case; New Castle, June 1-30, 3 cases.

Tennessee: Memphis, June 22-29, 4 cases; Nashville, June 30-July 6, 4 cases.

Texas: Galveston, June 21-28, 1 case.

Virginia: Richmond, June 22-27, 4 cases.

Washington: Fort Stellacoom, May 10-June 7, 2 cases; Spokane, June 22-29, 18 cases, 2 imported; Tacoma, 1 case.

Wisconsin: Milwaukee, June 22-29, 3 cases.

SMALLPOX—FOREIGN.

Brazil: Para, June 8-15, 12 cases, 3 deaths; June 15-22, 10 cases, 7 deaths.

Canada: Halifax, June 22-29, 6 cases.

China: Hongkong, May 11-25, 20 cases, 14 deaths; Neluchwang,

May 4-18, 3 cases; Shanghai, May 18-June 1, 5 cases among foreigners, among natives 83 deaths; 4 cases on S. S. *Wilmington*; Tientsin, May 18-25, 2 cases, 2 deaths.

Ecuador: Guayaquil, June 8-15, 1 death.

France: Lyon, June 11-18, 1 death; Paris, June 15-22, 1 death.

Germany: Königsberg, June 8-15, 1 case.

Greece: Piracus, June 15-22, 1 case.

Italy: General, June 13-20, 34 cases; Naples, June 13-22, 3 cases among emigrants, 1 case removed from S. S. *Perugio*; June 22, 2 fresh cases.

Java: Batavia, May 18-25, 3 cases.

Mexico: City of Mexico, June 1-8, 7 deaths; Monterey, June 16-23, 1 death.

Russia: Moscow, June 8-15, 12 cases, 2 deaths; Odessa, 4 cases, 3 deaths; Riga, 10 cases; St. Petersburg, May 25-June 1, 9 cases, 1 death.

Straits Settlements: Penang, May 18-25, 1 case.

Turkey: Bagdad, May 18-25, present; Smyrna, April 15-May 30, 17 deaths.

India: Bombay, May 28-June 4, 1 death; Calcutta, May 18-25, 32 deaths.

YELLOW FEVER.

Brasil: Para, June 8-22, 3 cases, 3 deaths.

Cuba: Santiago, July 8, 1 case, removed from S. S. *Puerto Rico*, embarked at Habana; Union de Reyes, July 9, 1 case.

Ecuador: Guayaquil, June 8-15, 1 death.

West India: Port of Spain, Trinidad, May 25-June 15, 6 cases, 2 deaths.

CHOLERA.

India: Bombay, May 28-June 4, 1 death; Calcutta, May 18-25, 46 deaths; Kashmir Province, May 20-27, 1,447 cases, 782 deaths.

PLAGUE.

Africa: King Williams Town, May 24, 1 case.

China: Hongkong, May 11-25, 19 cases, 17 deaths.

Egypt: Alexandria, June 6-13, 2 cases, 1 death; Assiout Province, 7 cases, 7 deaths; Behera Province, 2 cases, 2 deaths; Boni Sonef Province, 1 case, 2 deaths; Garbieh Province, 1 case, 1 death; Keneh Province, 15 cases, 15 deaths; Minieh Province, 1 case, 2 deaths.

French Cochin China: Saigon, May 21, present.

India: Bombay, May 28-June 4, 49 deaths; Calcutta, May 18-25, 131 deaths; Rangoon, May 18-25, 43 deaths.

Straits Settlements: Singapore, May 12-25, 3 deaths.

Medical Education and State Boards of Registration

COMING EXAMINATIONS.

ILLINOIS State Board of Health, Great Northern Hotel, Chicago, July 25-27. Secretary, Dr. J. A. Egan, Springfield.

KENTUCKY State Board of Health, City Hall Building, Louisville, August 1-2. Secretary, Dr. J. N. McCormack, Bowling Green.

CALIFORNIA Board of Medical Examiners, San Francisco, August 6. Associate Secretary, Dr. F. Dudley Tait, San Francisco.

The University of Missouri at St. Louis.—Direct information confirms the report that the University of Missouri will, after September, 1908, give the last two or clinical years of the medical course at St. Louis. This is made possible from the fact that the property of Barnes Medical College has been donated to the university free from incumbrance and without any conditions except that it be used for the advancement of medical education in the city of St. Louis. The property includes the ground, buildings and equipment of the medical, dental and pharmaceutic departments of Barnes University as well as Centenary Hospital, the entire property being valued at $275,000. The buildings are comparatively new, the medical building having been erected in 1896 and the hospital building in 1902, the latter having a capacity of 100 beds. The establishment of the clinical department at a city the size of St. Louis removes from the University of Missouri the handicap under which it has been working in the past, and will make that university a factor in the establishing of higher medical standards in that section of the country.

Two Medical Colleges Adopt Higher Requirements.—The trustees of Denver and Gross College of Medicine recently voted unanimously to require for admission to the study of medicine, beginning with 1910, in addition to a four-year high school education, a year of nine months to be devoted to physics, chemistry, biology and one modern language.

Similar action has been taken by the faculty of the College of Medicine of the University of Southern California.

Louisiana Board.—At a special meeting of the Louisiana State Board of Medical Examiners, held in New Orleans, July 13, Dr. F. M. Thornton, Arcadia, was elected president; Dr. C. D. Simmons, Baton Rouge, vice-president, and Dr. F. A. LaRue, New Orleans, was re-elected secretary and treasurer. The newly appointed member of the board is Dr. J. G. Martin, Lake Charles.

South Carolina June Report.—Dr. W. M. Lester, secretary of the South Carolina State Board of Medical Examiners, reports the written examination held at Columbia, June 11-13, 1907. The number of subjects examined in was 16; total number of questions asked, 115; percentage required to pass, 75. The total number of candidates examined was 60, of whom 41 passed and 18 failed, and one who left the room on account of sickness was granted a temporary license. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Medical College of Georgia	(1906) 75; (1907)	76
Howard University, Washington	(1906)	80
Atlanta College of P. and S.	(1907) 75, 76,	79
University of Maryland	(1906)	81, 84
Tulane University of Louisiana	(1907)	89
North Carolina Med. Coll.	(1905) 80; (1907)	75
University of North Carolina	(1907)	86
Leonard Med. School	(1907)	76
Medical Coll. of South Carolina	(1905) 83; (1906) 86; (1907) 75, 75, 75, 76, 76, 78, 79, 82, 82, 83, 84, 85, 85, 87, 89.	
Chattanooga Med. Coll.	(1906) 75; (1907) 75,	75
University of Nashville	(1907) 75,	75
Vanderbilt University	(1907)	77
Meharry Med. Coll.	(1905)	79
Medical Coll. of Virginia	(1905)	83
University of Virginia	(1907)	79
University Coll. of Medicine, Richmond	(1907)	84

FAILED.

Medical Coll. of Georgia	(1903) 66.6; (1906)	68.5
Maryland Med. Coll.	(1906)	49.2
College of P. and S., Baltimore	(1905)	72.3
Baltimore Med. Coll.	(1907)	72.6
Leonard Med. School	(1906) 64.8; (1907)	69
North Carolina Med. Coll.	(1905) 68.1; (1907) 57.1, 58,	72.6
Medical Coll. of South Carolina	(1907) 50.7,	63.3, 67
Chattanooga Med. Coll.	(1906)	62
Knoxville Med. Coll.	(1905)	39.2
University of the South	(1905)*	
University Coll. of Med., Richmond	(1907)†	

* Expelled from examination for cheating.

† Arrived too late to take all the examinations.

Louisiana May Report.—Dr. F. A. Larue, secretary of the Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, May 9-10, 1907. The number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 134, of whom 128 passed and 6 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Illinois Med. Coll.	(1907)	85
Louisville Med. Coll.	(1878) 78.4, 80.2; (1906)	77.2
Kentucky University	(1906)	87.2, 89.8
Hospital Coll. of Med., Louisville	(1906)	90.6
Kentucky School of Med.	(1898)	75
Flint Med. Coll.	(1904) 77.6, 80.6; (1907)	81.2, 81.6, 81.8, 83.2, 84, 84.6, 85, 87.6
Tulane University of Louisiana	(1883) 84.8; (1902) 84.8; (1906)	83.6; (1907) 76.4, 76.8, 81.8, 81.8, 82.6, 82.6, 82.8, 83.6, 84.4, 84.8, 85.6, 85.8, 86.4, 86.6, 86.8, 86.8, 87.6, 88, 88, 88.4, 88.6, 88.8, 89, 89, 89.2, 89.4, 89.6, 89.6, 89.6, 89.8, 89.8, 90, 90, 90, 90, 90.2, 90.4, 90.8, 91, 91, 91, 91.2, 91.2, 91.4, 91.8, 91.8, 92, 92.4, 92.4, 92.6, 92.6, 92.6, 92.6, 92.8, 92.8, 93.6, 93.8, 93.8, 94.6, 94.8, 95.
Medico Chirurgical College, Philadelphia	(1906)	87.8
Memphis Hospital Med. Coll.	(1891) 78.6; (1903) 91.4; (1905) 80.6; (1907) 75, 75.2, 78.4, 81, 82, 82.2, 82.6, 83.4, 87.8, 87.8, 88.2, 88.8, 92.4, 93.	
University of Nashville	(1906) 82.6; 1907) 82.4, 84.6, 85.6, 88.6, 88.8.	
University of the South	(1906) 76, 78, 81.4, 82, 83,	88.2
University of Tennessee	(1907)	83.6
College of P. and S., Memphis	(1907)	91.8
Vanderbilt University, Nashville	(1907)	86
Chattanooga Med. Coll.	(1904)	83.8
Meharry Med. Coll.	(1906) 82.8; (1907)	81.4, 83.8
College of P. and S., Dallas	(1907)	75.6, 85.4
Baylor University, Dallas	(1905)	81
Laval University, Quebec	(1907)	77.2

FAILED.

Hospital Coll. of Med., Louisville	(1905)	71.2
Baltimore University	(1904)	72.2
University of Nashville	(1872)	66
Memphis Hosp. Med. Coll.	(1903)	52
Meharry Med. Coll.	(1906) 74.2,	74.8

Pennsylvania June Examination.—At the examination held by the Pennsylvania State Board of Medical Examiners in Philadelphia and Pittsburg, June 25-28, 1907, 284 candidates were examined, including 15 women. The following questions were asked:

CHEMISTRY.

1. Name five morbid products which may be present in urine and give a reliable test for each. 2. Give the normal degree of acidity of the gastric juice, and describe a method of determining the relative acidity in a given case. 3. Give a test for the detection of blood in any secretion. 4. Give a chemical method for converting "hard" into "soft" water. 5. What chemical tests are used for detecting the presence of organic impurities in water?

MATERIA MEDICA.

1. Name an official solution containing mercury, iodin, and arsenic, and state approximately how much of each substance is contained in one dram, or 1 c.c. of the solution; also give the adult dose. 2. Name five drugs incompatible with a mixture containing iodid of potassium. 3. Name the ingredients which enter into compound extract of colocynth. 4. Discuss hydrastis canadensis, giving chief active principles and important preparations. 5. Write a prescription for a four ounce mixture containing bromid of potassium in combination with the active principle of hops.

ANATOMY.

1. Describe the portal system. 2. Describe the palmar fascia. 3. Describe the knee joint, give its articulations, and name and describe its cartilages. 4. Give the origin, foramen of exit, and distribution of the pneumogastric nerve. 5. Give the surface topography of the fundus of the gall bladder, lower border of the spleen, and the apex of the heart. 6. Give the length, course and relations of both the male and female ureters. 7. Describe the uterus, its position and relations. 8. Describe the stomach, name its coats and give its blood and nerve supply. 9. Locate the foramen of Winslow and name the structures in relation therewith. 10. Describe the bones forming the nasal fossæ, and name accessory sinuses communicating therewith.

PHYSIOLOGY.

1. Discuss the flow of blood in the capillaries, and explain why the capillary circulation occupies so important a place in the vascular system. 2. What is the normal rate of respiration per minute, and the ratio it bears to cardiac rhythm? 3. Explain how nutrition of the heart is effected, and name the sources of supply to the myocardium. 4. Summarize the functions of the blood, and specifically enumerate those of the erythrocytes and leucocytes. 5. Describe the three principal functions of the liver.

PATHOLOGY.

1. Discuss fatty degeneration, explaining of what it may be a symptom when affecting parenchymatous cells. 2. Discuss the effects of an exudative type of inflammation on structure, and explain how and why function may be permanently impaired. 3. Give a minute description of and explain the process occurring in necrosis of bone. 4. Describe the changes in the wall of an artery occurring in any form of aneurism. 5. Define embolism, and describe its sources and nature.

PRACTICE AND THERAPEUTICS.

1. What are the symptoms of aneurism of the arch of the aorta? 2. What are the symptoms of acute suppurative appendicitis? 3. What are the symptoms of locomotor ataxia? 4. What are the symptoms of obstructive jaundice? 5. What are the symptoms indicative of intestinal perforation in typhoid fever? 6. How would you treat a case of intestinal perforation in typhoid fever? 7. Name some of the indications and contraindications to digitalis. 8. Give some of the indications for the use of the following drugs as cathartics, and the dose of each: (a) Castor oil. (b) Calomel. (c) Magnesium sulphate. 9. Name some of the drugs used as diuretics and state the conditions in which they are severally indicated. 10. How would you treat a case of cardiac dropsy?

SURGERY.

1. Describe the symptoms of mastoid abscess and an operation for the relief of same. 2. Describe in detail an operation for the repair of a laceration of the female perineum. 3. Describe the proper technic of uterine curettage; name conditions indicating and contraindicating this operation. 4. Describe the essential principles involved in an operation for the radical cure of inguinal hernia in the male. 5. Describe in detail the technic of tracheotomy. 6. What symptoms in fracture of the skull demand immediate operation? 7. Describe in detail symptoms of internal abdominal hemorrhage, name conditions in which it might occur and outline the treatment. 8. Define volvulus and give the symptoms and treatment. 9. Give the symptoms and treatment of a fracture at the upper third of the femur. 10. Give the symptoms of a backward luxation of the forearm and method of reduction.

OBSTETRICS.

1. Give the symptoms of ectopic pregnancy and describe the treatment. 2. What are some of the prodromic symptoms of eclampsia, and how should you treat a patient thus threatened? 3. What are the causes of asphyxia neonatorum? Give treatment. 4. Describe delivery of child presenting by the breech. 5. What importance is attached to antepartum hemorrhage? Give causes and treatment. 6. Give treatment of pernicious vomiting of pregnancy. 7. What antiseptic precautions should be taken before and after delivery, with reference to attendants, mother and child? 8. What is the "bag of waters," what is its use, and what precautions are necessary in relation to it? 9. What precautions should be taken to avoid laceration of the cervix and perineum, and if there occur what should be done and how do it? 10. What measures should be taken to prevent ophthalmia neonatorum?

DIAGNOSIS.

1. Give the early diagnostic symptoms of locomotor ataxia, and differentiate between this disease and multiple neuritis. 2. Differentiate carcinoma of stomach and chronic pancreatitis. 3. Diagnosticate two varieties of cirrhosis of the liver. 4. Differentiate the more common late cutaneous and periosteal syphilitic diseases, and the non-specific diseases which closely resemble them. 5. Differentiate delirium tremens and cerebral meningitis.

HYGIENE.

1. What measures would you use to prevent the spreading of infectious and contagious diseases? 2. State the principal causes of infantile mortality, and what hygienic measures you would employ to reduce the mortality rate. What diseases may be transmitted through the agency of (a) the soil, (b) water, (c) air, (d) insects? 4. Describe an approved method of ventilating the sick room and explain the principles involved. 5. What principles should be observed for preventing eyestrain in the schoolroom?

Arizona April Report.—Dr. Ancil Martin, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, April 1-2, 1907. The number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 11, of whom 10 passed and one failed. The following colleges were represented:

PASSED.

College	Year Grad.	Per Cent.
University of California	(1892)	78
California Med. Coll.	(1893)	75
Hahnemann Med. Coll., Chicago	(1893)	77
Rush Med. Coll.	(1906) 80; (1907)	90.2
Indiana Med. Coll.	(1904)	76
Medical College of Ohio	(1899)	76
University of Pennsylvania	(1905)	85
American Med. Coll., St. Louis	(1897)	75
Western Pennsylvania Med. Coll.	(1893)	75.5

FAILED.

Barnes Med. Coll., St. Louis	(1902)	24.2

Minnesota April Report.—Dr. W. S. Fullerton, secretary of the Minnesota State Board of Medical Examiners, reports the written examination held at St. Paul, April 2, 1907. The number of subjects examined in was 15; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 18, of whom 9 passed and 9 failed. Fourteen reciprocal licenses were granted. The following colleges were represented:

PASSED.

College	Year of Graduation.	Medicine.	Surgery.	Obstetrics and Gynecology.	Materia Medica.	Anat. and Hist.	Physiology.	Chem., Toxicol. and Urinalysis.	Pathology and Bacteriology.	Prac. Med. and Med. Juris.	General Average.
Rush Med. Coll.	1905	95	85	84	96	95	80	88	99	82	82.2
Rush Med. Coll.	1905	78	75	75	80	82	75	63	86	82	77.3
Coll. of P.&S., Chicago	1906	76	76	79	77	75	75	66	88	78	76.7
Northwestern	1905	99	77	91	92	93	88	75	96	86	88.2
University of Minnesota	1906	78	77	75	84	75	76	79	64	78	76.2
Minn. Coll. of P. & S.	1906	94	77	77	79	80	76	70	80	75	78.6
Jefferson Med. Coll.	1889	80	85	89	96	76	75	72	75	72	80
University of Virginia	1906	82	76	69	82	91	82	75	78	72	77.4
McGill Univ., Quebec	1906	79	80	64	79	92	90	93	78	77	81.5

FAILED.

Rush Med. College	1902	74	54	71	60	70	60	41	76	70	65
Ft. Wayne Coll. of Med.	1906	74	47	65	60	70	75	55	67	72	65
Minneap. Coll. of P.& S.	1906	68	69	52	49	75	75	58	82	72	66.6
Minneap. Coll. of P.& S.	1904	78	57	64	61	72	57	39	47	68	60.1
Univ. of Minnesota	1906	80	50	75	62	75	78	45	74	68	68.3
*Minneap. Coll. of P.& S.	1906	80	76	66	75	83	75	67	86	75	75.9
Miami Med. College	1902	84	68	68	75	90	60	58	75	72	69.7
Milwaukee Med. College	1904	74	54	90	75	74	75	47	62	72	68.3
University of Toronto	1906	77	75	62	75	86	63	75	76	73	73.5

*Failed on account of his low marking in obstetrics.

LICENSED THROUGH RECIPROCITY.

College	Year Grad.	Reciprocity with.
Northwestern University	(1903)	Iowa; (1906) Illinois
College of P. & S., Chicago	(2. 1904)	Illinois; (1893) Iowa
Bennett Coll. of Ecl. Med. & Surg.	(1887)	(1898) Wisconsin
Hahnemann Med. Coll., Chicago		(1906) Illinois
Rush Med. College		(1898) Illinois
Sioux City Coll. of Med.		(1904) Iowa
University of Michigan		(1887) Michigan
Syracuse University		(1901) New Jersey
Jefferson Med. Coll.		(1906) Illinois
Woman's Med. Coll. of Pennsylvania		(1878) Iowa

Marriages

RALPH C. MATHENY, M.D., to DELIA M. RICE, M.D., both of Galesburg, Ill., July 3.

MYER BRODY, M.D., Philadelphia, to Miss Anna Bialosky of Cleveland, Ohio, June 25.

EDWARD FRANKLIN STEPHENS, M.D., Pine Knot, Ky., to Miss Mary Etta Burnette, June 27.

SELMON A. CASSADY, M.D., to Miss Ellen Smith, both of Cantril, Iowa, at Keokuk, June 27.

WILHELM S. ANDERSON, M.D., Warren, Minn., to Miss Anna C. Anderson of Joliet, Ill., July 2.

HENRY WOLF GRAY, M.D., Philadelphia, to Miss Florence Crawford of Ferrol, Va., June 12.

HARRY R. WOODS, M.D., Pittsburg, Pa., to Miss Nan B. Spanogle of Johnstown, Pa., July 2.

JOHN E. PREST, M.D., Comstock, Neb., to Miss Maud Isabelle Pearce of McCool Junction, Neb., June 26.

Deaths

Ralph Preston Stubbs, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1897; a member of the American Medical Association; assistant gynecologist at Delaware Hospital; visiting physician to the Home of Merciful Rest for Incurables, Wilmington; physician to the Newcastle County Workhouse; a member of the Wilmington board of health, and one of the organizers and a director of the Delaware Anti-Tuberculosis Society; a young practitioner of great promise; died at his home in Wilmington, July 7, after an illness of more than twelve weeks, from ulcerative endocarditis, aged 32.

Charles Henry Mills, M.D. Medical Department, Western Reserve University, Cleveland, 1857; Illinois Army Board, 1862; Medical Department of the University of Nashville, Tenn., 1864; a member of the American Medical Association, and one of the oldest practitioners of central Illinois; surgeon of the One Hundred and Twenty-fifth Illinois Volunteer Infantry during the Civil War, died from heart disease at his home in Champaign, Ill., July 4, aged 83.

James Hamlin Gunn, M.D. Bellevue Hospital Medical College, New York City, 1869; a member of the American Medical Association; once president of the Shelby County Medical Society, and for 30 years a practitioner of Calera, Ala., on June 29, while remonstrating with policemen who were maltreating a prisoner, was shot by one of the policemen and died in St. Vincent's Hospital, Birmingham, July 3, aged 61.

Mark Anthony Dashiell, M.D. Medical College of Indiana, Indianapolis, 1851; a pioneer practitioner of Indianola, Iowa, and a member of the Iowa State and Warren County medical societies; thrice representative and twice senator in the state legislature; for 10 years a trustee of the State Industrial School, died at his home in Indianola, July 3, after an illness of three weeks, aged 81.

William Parmenter, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1857; a member of the Michigan State and Eaton County medical societies, and for 45 years a practitioner of Vermontville, Mich., died at his home in that place, July 4, after an invalidism of several years, aged 78.

William L. Albright, M.D. Eclectic Medical Institute, Cincinnati, 1891; a member of the Michigan State and Allegan County medical societies; died at his home in Allegan, Mich., July 6, after an illness of five days, and three days after an operation for appendicitis, aged 39.

Edward John Hadfield, M.D. Jefferson Medical College, Philadelphia, 1890; a member of the Medical Society of the State of Pennsylvania and Chester County Medical Society, died at his home in Phoenixville, Pa., July 5, from paresis, complicated by nephritis, aged 39.

F. M. Magruder (Years of Practice, Ky.), 1893; for more than 40 years a practitioner of Daviess County, Ky., and for 20 years a resident of Utica, died at the home of his daughter in Habit, Ky., July 5, after an illness of ten days, from heart disease, aged 68.

Almon L. Ellsworth (Years of Practice, Mich., 1900); for more than 50 years a practitioner of Lowell, Mich., and once supervisor of the town, died at his home, April 29, from cerebral hemorrhage, after an illness of three days, aged 81.

James Bradley Everett, M.D. Dartmouth Medical School, Hanover, N. H., 1861; a member of the Massachusetts Medical Society, and for nearly 40 years a practitioner of Everett, Mass., died at his home in that place, May 20, aged 78.

Bertrand H. Keating, M.D. McGill University Medical Faculty, Montreal, 1904; of Montreal, died at Los Angeles, Cal., July 5, after a prolonged illness, which had necessitated his residence in Denver, Mexico and Northwest Territory.

John J. Hoopingarner, M.D. Western Reserve University Medical College, Cleveland, 1854; died at his home in Berrien Springs, Mich., July 6, six weeks after an accident in which he fractured his thigh, aged 83.

William Acland Haywood Oronhyatekha, M.D. Faculty of Medicine of Trinity College, Toronto, 1892; died suddenly at his home in Deseronto, Ont., July 7, from heart disease, aged 38.

William D. Groton, M.D. University of Maryland School of Medicine, Baltimore, 1879; died at his home in Rivera, Cal., July 2, after an illness of several weeks, aged 52.

Alexander W. Swan, M.D. Eclectic Medical Institute, Cincinnati, 1869; died at his home in Middleport, Ohio, July 4, after an illness of a few days, aged 79.

Joseph L. Duhart (Examination, La.); a resident of Lafayette, La., for 20 years, died at his home, June 23, after a brief illness, aged 57.

P. L. Powell, M.D. Barnes Medical College, St. Louis; of Summerville, Mo., died recently while returning from making a call on a patient.

Robert E. Worley, M.D. Rush Medical College, Chicago, 1903; a medical missionary, was accidentally drowned at Swatow, China, July 5.

Elbert J. Powell, M.D. Medical College of Alabama, Mobile, 1872; died at his home in Maysfield, Texas, March 8, aged 57.

Deaths Abroad.

Sir William Henry Broadbent, Bart., K.C.V.O. 1884; M.D. London, 1860; F.R.C.P. London, 1869; LL.D. Edin., 1898, and St. Andrews, 1899; D.Sc. Leeds, 1904; F.R.S.; physician extraordinary to Queen Victoria from 1898 to 1901; physician in ordinary to the king and the prince of Wales; commander of the Legion of Honor; fellow of the Royal Medico-Chirurgical Society and Medical Society of London; honorary member of many learned societies; consulting physician to St. Mary's Hospital, London Fever Hospital and New Hospital for Women; formerly senior physician and lecturer on clinical medicine at St. Mary's Hospital; president of the Medical Society of London in 1881; of the Harveian Society, of the Clinical Society in 1887-88 and of the Neurological Society in 1895-96, and censor of the Royal College of Physicians in 1888-89 and 1895-96; eminent as a practitioner and writer; an authority on pulse and heart disease, died at his home in London, July 10, aged 72.

Julius Dreschfeld, M.D. Würzburg; F.R.C.P. Lond.; B.Sc. Vict.; consulting physician to the Manchester Royal Infirmary; professor of medicine, Victoria University, Manchester, died at Manchester after an illness of only four days, aged 61. He was born in Bavaria, but came to Manchester in 1861, at the age of 16. He was educated at Owens College, where he distinguished himself. In 1872 he was appointed assistant physician to the Manchester Royal Infirmary, and in 1883 full physician. In 1881 he was appointed lecturer on pathology at Owens College, and in 1891 professor of medicine. For many years he held the foremost position as a physician in Manchester and his opinion was much sought after in difficult cases by his medical brethren. He was an indefatigable worker, with all that minuteness and thoroughness for which the Teutonic mind is famous. His contributions to medical literature are numerous and important. They include "The Bradshaw Lecture" on diabetic coma, delivered before the Royal College of Physicians in 1888; "Enteric Fever," "Gastric Ulcer and Endocarditis," in Allbutt's System of Medicine; "Primary Lateral Sclerosis," "Alcoholic Paralysis," and "Some of the Rarer Forms of Muscular Atrophy," "Adenoma of Adrenals."

Society Proceedings

COMING MEETINGS.

Minnesota State Medical Association, Duluth, August 13.
Wisconsin State Medical Society, Superior, August 20-22.
Ohio State Medical Association, Cedar Rapids, August 28.

RHODE ISLAND MEDICAL SOCIETY.

Ninety-sixth Annual Meeting, held in Providence, June 13, 1907.

The President, DR. C. F. BARKER, Newport, presiding.

Officers Elected.

The following officers were elected for the coming year: President, Dr. C. V. Chapin, Providence; vice-presidents, Drs. F. B. Fuller, Pawtucket, and E. Kingman, Providence; secretary, Dr. S. A. Welch, Providence; treasurer, Dr. G. S. Mathews, Providence.

The secretary's statement showed that the society has 377 members, of whom 339 are resident fellows, 26 are non-resident, and 12 are honorary members.

The committee on contract work, through Dr. George D. Hersey, chairman, presented the following resolution, which was passed:

Resolved, That contract practice requiring a physician to attend people not in destitute circumstances, for a sum much lower than the ordinary fee, is unbusinesslike, undignified, unfair to other practitioners and derogatory to the best interests of the medical profession.

Prizes.

The trustees of the Fiske fund reported that the prize of $250 for the best essay on "Diet in Typhoid Fever" had been awarded to Dr. John Benjamin Nichols of Washington, D. C. For 1908 a prize of $200 is offered for the best essay on the subject, "Has Surgical Treatment Lessened the Mortality of Appendicitis." For 1909 a prize of $200 is offered for the best essay on "The Mode of Infection and the Duration of the Infectious Period in Scarlet Fever."

The trustees of the Chase-Wiggin fund reported no award of the prize offered this year. For the year 1908 a prize of $75 is offered for the best popular essay on "Tea and Coffee and Their Injurious Effects."

DR. JOHN CHAMPLIN reported as delegate to the American Medical Association, showing the wonderful growth in numbers in the last few years, the business aspect and some of the work of national importance which had been accomplished.

Foreign Body in Bronchus.

DR. FRANK B. SPRAGUE reported two cases of foreign bodies in the right primary bronchus which were successfully removed. The first was a ten-ounce tack, which could be seen in the bronchus with the bronchoscope. A tracheotomy was done, and by means of Kelly's cystoscope and a long uterine forceps the tack was removed. After its removal there was a flow of sero-mucus which had accumulated below the tack.

In the second case an eighteen months' baby had a piece of a peanut in the right bronchus. There was great dyspnea and an alarming condition. The same method was followed as in the first case, using ether, the cystoscope, and a uterine tenaculum with a part of the end broken off to hook up the peanut. Both patients made prompt recovery.

DR. JOHN CHAMPLIN emphasized three things as "good business" for the physician: Cleanliness, personal and moral, the best equipped and most attractive office he could provide, and a good residence and turnout. He spoke of the awakening which, he said, was taking place everywhere among medical societies, and declared that the organized profession was becoming for the first time a force to be reckoned with in state and national legislation. Dr. Champlin thought there should be a secretary of health in the President's Cabinet, declaring that health was the most important of all matters of national concern, and the neglect to recognize it due only to the self-depreciation of medical men.

The Psychic Factor in Disease.

DR. GEORGE C. SMITH, Boston, said that the "psychic fad" differed in no wise from other delusions that had been taken up, dissected, their nucleus of good extracted and dropped. He called it a fad, he added, but in Boston at present it was almost a monomania. The principal point of difference from popular delusions of the Middle Ages was that then the devotees were the ecclesiastics and the populace, whereas now they were the members of the teaching and medical professions. The rest of the paper was devoted to a technical and professional discussion of the value and place of psychic treatment in neurasthenia, melancholia and similar diseases.

Expert Medical Testimony.

MR. JUSTICE BROWN of the United States District Court said that it was the common opinion among local judges that the physician, as a rule, made a good witness; that he was honest, clear in his statements and showed a trained mind. Judge Brown said that in dealing with the ordinary questions of law we must look to the usual safeguards which our present system affords. There are, however, in the medical profession, as in the legal profession, a very small minority who are dishonest, and these men present a substantial problem. That is not merely a problem of the medical expert; it is a general problem of the liar in a court of law; the special problem of the liar who is given the privilege of expressing his opinion on obscure questions. The problem is practically the same with the patent expert, the real estate expert, and the expert on any of the subjects of expert testimony. The dishonest medical expert, he concluded, must be dealt with as any other dishonest witness, as an individual.

Judge Brown upheld the value and necessity of the medical expert's presence in the courts. He had not found in his experience basis for the general and sweeping condemnation of medical testimony, he said. On the contrary, he held the honest partisanship of the witness under fee as an expert to be not at all an unmixed evil. That the witness was under fee was known to the jury, which always considered that fact, and he had more occasion to caution juries to give due weight to expert testimony than to caution against giving it undue weight. He did not favor the proposed substitution of a court-appointed commission for experts retained by the contending parties, regarding it as open to serious objection as an interference with the system of trial by jury. It was no part of the judicial function, said Judge Brown, to select witnesses or endorse their credibility. That was for the jury. He also disapproved of the proposal to abolish the hypothetical question as entirely impracticable and a most extraordinary attack on ordinary logical processes of human reasoning. He referred to the great advantage of the hypothetical question, in that it permits an opinion on a state of facts prior to the final establishment of that state of facts. He stated that it was often the most exact and shortest method of trying the real issue in a case.

Professional Secrets in Courts of Law.

HON. CHARLES E. GORMAN traced the rise of the professional privilege in the law. Through the years the evolution had been restriction rather than extension of the privileged communication. At present the right is confined to the lawyer and the priest, and in some twenty-five or thirty states to the doctor. Mr. Gorman pointed out some of the differences between the confidences of lawyer and client and of doctor and patient. He showed that practically the doctor's practice was never diminished by lack of privilege; that it was only in a few cases that the physician himself felt any need of secrecy, as in a case of venereal disease. The demand is more of a sentiment than a need. He thought that the doctors should disclose all they knew and so help the administration of justice.

MEDICAL SOCIETY OF NEW JERSEY.

One Hundred and Forty-first Annual Meeting, held at Long Branch, June 25-27, 1907.

The President, DR. ALEXANDER MARCY, JR., Riverton, presiding.

Legality of State Medical Examinations and Reciprocity.

DR. E. L. B. GODFREY, Camden, said that the right of a state to demand that graduates of medical colleges shall pass a state board examination before being allowed to practice is based on the police power of the state. It is one of the rights not vested by the Constitution in the federal government nor denied to the states. It could not be exercised by the federal government without an amendment to the Constitution. He also made a strong plea for reciprocity between states having nearly similar standards of qualifications.

DR. MORTIMER LAMPSON, Jersey City, denied that medical examining boards had had any influence in advancing the merits or standing of the profession.

DR. C. D. BENNETT remarked that no practitioner could state that the attention of the New Jersey Board of Examiners had ever been called to any one practicing illegally, but what they had called the attention of the district attorney to the matter. The law does not permit the board to prosecute. He likewise claimed that the examining board does advance the profession by raising the standard and compelling the colleges to raise theirs in accordance with it.

Progress in Surgery.

The evening session was a general one. Dr. Albert Vander Veer, Albany, N. Y., delivered the oration in surgery, reviewing the progress made in almost every conceivable surgical procedure during the last 40 years.

The Physician and the Medical Press.

DR. MORRIS MANGES, New York, in the oration on medicine contended that what is regarded as unfit for the body of a

medical journal should be considered unfit for its advertising pages. He thought that articles regarding the newer drugs should be published for the information of physicians, but that manufacturers should be forbidden to reprint these for commercial purposes.

When to Operate and When Not to Operate in Ruptured Ectopic Pregnancy.

DR. J. S. BAER, Camden, said that although it would be best to operate before rupture has taken place, this is not possible; therefore, the question is when to operate after the rupture has been diagnosed. He said that in most cases one should operate as soon as the diagnosis is made; but that in some few cases, when there is profound shock, a little waiting will sometimes result in saving life. He reported six cases, illustrating these points.

DISCUSSION.

DR. B. F. BAER, Philadelphia, always operates whenever there is a tumor found in the pelvis, whether it is extrauterine pregnancy or not. When the rupture has occurred and the patient is practically dead, Dr. Baer believes that the patient will be saved more frequently if the gynecologist waits for a while. He does not endorse the operation by vaginal section in extrauterine pregnancy.

DR. EDWARD J. ILL, Newark, thought that such patients should not be taken to a hospital, but should be attended to on the spot, no matter where it be. He also thought that no operation should be performed in cases of tubal abortion.

DR. P. A. HARRIS, Paterson, said that there are two symptoms by which the general practitioner can diagnosticate ectopic gestation; atypical menstruation and pains. He should not accept a statement that it is probably a case of abortion without inquring whether the fetus has been seen by anyone.

DR. G. K. DICKINSON, Jersey City, did not think that operation had ever hastened a death in extrauterine pregnancy. He believes in always operating, without waiting to transfer the patient to a hospital.

DR. EMERY MARVEL, Atlantic City, said that in conditions of shock, stimulation will benefit the vasomotor system, and can be given during the operation. Therefore, delay on that ground is unjustifiable.

DR. J. W. MARTINDALE, Camden, recently had two cases in the tragic stage of ectopic gestation. One patient was operated on and died, and the other was operated on and recovered. One can not tell which case will recover and which will not, so one should operate in all cases. Collapse is a fainting condition, and fainting is Nature's way to stop bleeding. If stimulation is applied the bleeding will recommence. It would, therefore, be productive of more harm than good.

DR. J. S. BAER does not believe in stimulation, except in a radical operation. He saved one patient by intravenous infusion of salt solution. He does not know in which cases waiting will save the patient, but feels that such cases exist. All his patients were out of bed sooner than if he had operated from below. He believes that the hematocele is absorbed in but a limited proportion of cases.

Diet in Pulmonary Tuberculosis.

DR. THEODORE SENSEMAN, Atlantic City, said that not the amount of food ingested, but the amount assimilated, is the important consideration. Improve digestion and allow appetite to follow of its own accord. There is a pivotal point in each patient's digestive ability, which must be ascertained. This pivotal point is capable of being raised. All tubercular individuals show evidences of digestive derangement. It is folly to attempt to make them do more work in this condition than they could in a healthy state. Stuffing patients with solid food is, therefore, a mistake. The diet that gives the greatest amount of nourishment and makes the least demand on the digestive organs is the diet of choice. Raw eggs and milk meet these requirements. Each patient has a normal weight, beyond which we should not endeavor to force him. This normal weight attained, the smallest quantity of food that will enable him to maintain it is sufficient. So long as this normal weight can be maintained, the patient has nothing to fear from tuberculosis.

DR. D. E. ENGLISH, Milburn, emphasized the value of purgation. He favors three or four bowel movements a day, to get rid of the waste products of the extra amount of food ingested. He adds a little water and salt to each glass of milk.

Premature Separation of the Placenta.

DR. J. W. MARTINDALE, Camden, described a fatal case. He at first thought the patient was suffering from placenta prævia, but soon became suspicious that there was a separation of the placenta, and that the blood was working its way between the uterus and the membranes. The uterus was emptied, and the placenta was swept out with a tremendous gush of blood. The uterus contracted well, and the patient did not lose much blood after delivery. The pulse was very weak and the respirations rapid. Stimulants failed to rally her, and she died an hour and a quarter after being seen.

DR. CHARLES P. NOBLE, Philadelphia, said that everyone who attends labor cases should post himself regarding premature separation of the placenta, because, though such cases are rare, the only salvation of the patient is that the physician act promptly and courageously. The consensus of opinion is that if, at the time the diagnosis of concealed hemorrhage is made, the cervix is sufficiently dilated for the application of the forceps, that treatment should be instituted. If not, a Cesarean section should be done at once, provided there is available anyone that can do it properly; but it should never be done by one that does not know anything about it.

Etiology of Diseases of the Gall Bladder.

DR. H. G. NORTON, Trenton, said that cholecystitis is more difficult to diagnose and less amenable to treatment than other surgical diseases. It is thought to be most commonly caused by (1) microbic infection, (2) toxins, and (3) direct traumatism to the gall bladder. The microbic infections include septicemia, pyemia, influenza, pneumonia and typhoid fever, and toxins arising from diseases of the alimentary canal, including typhoid and dysentery. Appendicitis is sometimes a focus for the spread of the infection to the liver and gall bladder. It may be direct extension from the duodenum, through the common and cystic ducts, or by way of the blood vessels, or both. The author has never seen a well-marked case of typhoid cholecystitis, although it does occur as a complication. The irritation of previous cholelithiasis may be the factor needed to produce cholecystitis as a complication of typhoid, acting either by obstructing the duct and causing distension, or by ulceration of the mucous membrane from pressure, thus affording an avenue of infection. More than one variety of germ may be found at the same time in the gall bladder. Suppurative cholecystitis is due to a further development of the causes of acute cholecystitis. The presence of gallstones in the gall bladder is probably a frequent causative factor of cancer, but gallstones are frequently present for years in cases in which no cancer develops. Primary cancer occurs without the presence of gallstones in 20 per cent. of the cases. Irritation from the gallstones in the gall bladder of a person predisposed to cancer, probably produces cancer of the liver. Analogous to irritation by the gall bladder as a factor in causing cancer is the greater frequency of uterine and mammary cancer in multipara.

Diagnosis of Diseases of Gall Bladder.

DR. P. A. HARRIS, Paterson, said that to make the diagnosis one should uncover the body of the patient and have the exact seat of the pain pointed out. Palpation, inspection and percussion should then be practiced, in cholecystitis it is the inflammation caused by the stones, rather than the stones themselves, that causes the symptoms. The commonest diagnostic symptom is colic. The pain does not always center over the gall bladder, although it usually does. The differential diagnosis is to be made from: 1, Lesions of the gall bladder; 2, ulcer and cancer of the stomach and duodenum; 3, appendicitis; 4, kidney stone or tuberculosis, and 5, pancreatitis. Under the heading of gastralgia may often be found a good description of gallstone colic. Jaundice does not appear when the seat of inflammation is limited to the gall bladder. Its presence is presumptive evidence of gallstone disease, but its absence would not disprove this diagnosis. The test of find-

ing or not finding gallstones in the stools after the attack has only a restricted value.

Medical Treatment of Diseases of Gall Bladder.

DR. JOHN H. MUSSER, Philadelphia, said that there are many instances in which operation can not be resorted to. Cholelithiasis is caused, on the one hand, by toxic influences; and, on the other, by alterations in the digestion producing modifications in the reflexes of the duodenal end of the stomach, and thus causing either a limitation or an increase of hepatic secretion. It may also arise from circulatory conditions of the liver secondary to heart trouble and from infection. Remembering these four predisposing conditions, one realizes that there is a large field for medicinal or hygienic therapy. In a general way, then, it may be said that cholelithiasis demands hygienic treatment; removal or modification of the cause, so far as it can be brought about; and, further than this, the use of specific measures. In a number of cases Dr. Musser has succeeded in probably lessening the number and severity of the attacks by having the patient wear a properly constructed bandage. In regard to the use of olive oil, Dr. Musser has seen no relief from the gallstones from its use; but sometimes there is a relief from the hyperacidity that usually accompanies gallstones. After its administration the patient can nearly always exhibit pseudo-gallstones.

Surgical Treatment of Gall-Bladder Disease.

DR. JOHN B. DEAVER, Philadelphia, said that disease of the gall bladder shows itself in two forms, the calculous and the non-calculous. In both forms there are various grades of inflammation of the gall bladder. Adhesions of the upper abdomen are sometimes so thick that the liver is never seen during the operation for stone. These adhesions are the result of delay in surgical intervention under the guise of medical treatment. The physician should not delay until hope is gone and the surgeon becomes a last resort. The indications for immediate intervention are (1) complication showing the spread of infection; (2) symptoms of obstruction of the common duct after a reasonable interval. Other conditions demand operation, but the necessity is not so urgent. The purpose of operation is to remove the inflammation, to remove the stones and to prevent recurrence. When the structures are not normal the procedure becomes very difficult; and one should be a master of the anatomy of the upper abdomen. It is much wiser to drain outside of the abdomen than to allow the infectious bile to flow into the duodenum. The drainage should be left in until it has accomplished its purpose and is ready to drop out. The diet should be restricted.

DISCUSSION.

DR. E. W. HEDGES, Plainfield, criticised Dr. Deaver for saying that he hesitated to take out the gall bladder under certain conditions. If the source of gallstones is nearly always in the gall bladder, why not take it out when you get a chance, and thus rid the system of the possibility of a recurrence? Dr. Hedges said that the fact that 10 per cent. of the autopsies performed show gallstones, and that one elderly woman in every four has gallstones has a direct bearing on the treatment of this condition. If they are common in women, it must be due to the retardation of the bile caused by tight lacing. When a patient complains of persistent nausea and vomiting or of recurrent pains in the epigastric region, one should palpate carefully in the region of the gall bladder.

DR. A. VANDER VEER, Albany, emphasized the rôle of typhoid in the production of gallstones. He has found typhoid bacilli ten or twelve years after the attack of typhoid, and always takes this factor into consideration. He related a case of typhoid in which gallstone colic developed. The patient was operated on during the acute attack and recovered. Dr. Vander Veer believes that there are certain cases that the medical man may treat successfully, but that most patients that think they are cured by this means are not, and finally have to be operated on. When there is great distension he is suspicious of malignant trouble. In such cases he has done gastrointestinal anastomosis and drained the gall bladder, and this made the patient comfortable for years. It is in that condition particularly that an exploratory incision is of benefit. Dr. Vander Veer said that it is very difficult to get patients to give up the belief that olive oil does good in some cases. He believes that the gall bladder should be allowed to drain as long as it will, which will sometimes be as long as eighteen months or two years. If it goes longer one should reopen the wound, when a useless sac that can be dissected out will usually be discovered.

DR. PHILIP MARVEL, Atlantic City, referred to the intermediate class of cases demanding immediate operation. These he classed as (1) those that are complicated by other diseases previously to the attack, and (2) those that are complicated by diseases following the attack. He asked whether in such cases it would not be better not to operate.

Relations, Responsibilities and Duties of Medical Profession.

DR. ALEXANDER MARCY, JR., in his presidential address made an appeal to the medical press. He considered the following points: 1. How can we elevate the standing of the medical profession in the community? 2. What is its moral responsibility? 3. What is its duty regarding some of the evils that threaten our body politic? His recommendations were: 1. A four years' course followed by a year in a hospital before the degree is conferred, a re-examination every five years, and a comprehensive plan of postgraduate work. 2. That the members be well developed morally, with the highest ideals, and characters above reproach. 3. That the profession should use their best efforts to create a sentiment among the people against the use of liquor, and that it should report every case of abortion to the prosecuting attorney.

The General Practitioner and Laboratory Methods of Diagnosis.

DR. ROBERT N. WILLSON, Philadelphia, said that internal medicine includes, primarily, an accurate diagnosis; a very little therapeutics; abundant intelligence and common sense, and every scientific method of diagnosis and treatment that can be proved to be practical and available for general use. No condition can be diagnosed completely and exclusively by means of olden methods or by the new. Every known aid to accuracy must be utilized. Laboratory methods are useful and necessary in the study of disease. Without them no study has been even part way thorough. If the general practitioner will devote to scientific medicine the odd minutes often spent over a glass or a cigar he will save an hour out of the twenty-four. An additional hour may often be secured after his family have retired to rest. If he is too busy, he should have an assistant on whom he can depend for accurate and prompt laboratory reports. Beginners in practice are very glad to get such work to do. They should send in their own bills, as the best means of preserving their identity. Laboratory methods can be used by the well-equipped physician as a means to dignity and self-support. Laboratory medicine has opened up a new field for the young and poor man. As he grows older it will be a comfort to him as a clinician to be able to control by first knowledge the work of his laboratory men. The family doctor has not gone and will not go, and the specialist is here to stay. The laboratory enthusiast is another fixture. In all these classes one will occasionally find the physician who scorns no method and flouts at no school; who executes his own work perfectly, so long as it is a possible thing, and then enlists the aid of younger men, whose untempered science finds its complement in his own mellow judgment and ripe experience.

DR. ALEXANDER MARCY, JR., said that while it is easy for the laboratory worker and the clinician to cooperate in the city, it has not until now seemed feasible in the rural districts. It has, however, become absolutely necessary for the country doctor to avail himself of these scientific and accurate methods. Dr. Marcy suggested that the country practitioner should take a postgraduate course of study at a medical school, and should keep in touch with progress by means of current medical literature. Each community should have some one man who is competent to attend to laboratory investigations and willing to devote his time to them. The county medical society should be the center of graduate medical work and study, as well as for the diffusion of a knowledge of the recent discoveries and latest practical methods of treatment.

The next annual meeting will be held at the Hotel Cape May, Cape May, June 27-29, 1908.

Other Papers Read.

The following papers were also read: "Some Remarks on Lymphatics," by Dr. E. Z. Hawks, Newark; "Complications in Diseases of the Biliary System," by Dr. G. K. Dickinson, Jersey City; "Toxins and Antitoxins," by Dr. B. A. Waddington, Salem; "Symposium on Scarlet Fever, Measles, Roethein and Smallpox," by Drs. H. Williams, Passaic; P. Marvel, Atlantic City; A. McAllister, Camden; E. E. Worl, Newark.

Section Discussions

PREPARED AND PREDIGESTED FOODS.

BY GRAHAM LUSK, NEW YORK.

(*Concluded from page 202.*)

DISCUSSION.

DR. S. J. MELTZER, New York, said that he hoped the members of the Section would know that Dr. Lusk is one of our best authorities on the questions pertaining to metabolism, and that his coming out firmly against many of these foods is to be regarded as a brave, public-spirited act.

DR. W. S. THAYER, Baltimore, said that he considered Dr. Lusk's book on the "Science of Nutrition" one of the most valuable works on the subject for the general practitioner; indeed, he felt that it was the most important addition to his library during the past year.

DR. W. A. WITHERSPOON, Nashville, Tenn., said that for a long time many have depended on these so-called predigested foods. It is simply marvelous what amounts are sold. Persons throughout the country have an idea that because the stomach will not reject some of the foods mentioned by Dr. Lusk that they are ideal foods. This is an error, for the majority of them have no nutriment and are prepared entirely for commercial purposes. He felt that Dr. Lusk would confer on the Section a great benefit if he would demonstrate, and let it be known, what these foods really consist of; let it be well known that the Section stamps its disapproval on these products. In treating the convalescent and the patient with gastro-intestinal disorders, the physician should take into consideration that they do better if given more beef juice, eggs, albumin, true foods, and that they should depend less on what is made with little science and offered for commercial purposes.

DR. WOODS HUTCHINSON, New York, said that physicians' responsibility to the public should be considered. After referring to what Smith and Adams have done in their crusade against quack remedies, he said that the gun should be turned against some of the medical journals whose pages are filled with their advertisements. Not only is there a low proteid content in these predigested foods, but a considerable part of the proteid is so changed in the process of preparation that it is no longer valuable in the animal economy.

ETIOLOGY OF INFANTILE ATROPHY.

BY DR. A. H. WENTWORTH, BOSTON.

(*Concluded from page 210.*)

DISCUSSION.

DR. E. E. GRAHAM, Philadelphia, said that physicians are continually brought in contact with cases of atrophy, in which they are convinced that the amount of atrophy is out of proportion to the failure of digestion and absorption, and most men are only too glad to grasp at any hypothesis that may explain the condition. In other words, these are not cases of malnutrition because the patients do not digest and do not absorb enough nutriment to build them up. Other children are seen, he said, who regain their health and weight, but who take less food and digest less of the food taken. In the cases described by Dr. Wentworth the patients gradually fail and die. Not only that, but nothing is found at the autopsies that will enable one to differentiate these cases.

DR. R. B. GILBERT, Louisville, Ky., referred to some cases showing gross lesions, i. e., enlargement and induration of the mesenteric glands; whether due to remote specific history or not, he did not know. In these patients, induration of the mesenteric glands completely shuts off the nutritive element on the way to the lacteals. The child dies hungry and apparently assimilating its food.

DR. G. H. CATTERMOLE, Boulder, Colo., said that he had an interesting case of this kind. The child lived to three years of age, by careful feeding, and at death the pancreas was found completely fibrous. There was no pancreatic tissue whatever. Shortly after the death of the child the father was operated on for suspected appendicitis, but the intestines presented more the appearance of a syphilitic condition. A second child underwent operation for supposed appendicitis, and a third child is now in a condition of malnutrition at the age of 2½ years. Dr. Cattermole said that any one who had followed such cases has been impressed with the fact that failure to achieve success is due to the inability of the child to secrete the particular fluids necessary for the digestion of its food.

DR. A. H. WENTWORTH, Boston, said his paper dealt solely with infantile atrophy; other causes of emaciation in infants, such as syphilis, tuberculosis, etc., do not belong in the discussion. The size of a lymph node is no measure of its absorptive power. The mesenteric lymph nodes may be enlarged to some extent in infantile atrophy. He had seen lymph nodes, in other respects normal, that were two or three times the usual size. A marked enlargement of the mesenteric lymph nodes is not characteristic of infantile atrophy, and in most cases such enlargement is due to tuberculosis. With few exceptions patients with infantile atrophy recover promptly on good breast milk, and the reason that most cases fail to do well is because they receive some other kind of nourishment.

OBSERVATIONS ON PEMPHIGUS.

BY DR. JOSEPH ZEISLER, CHICAGO.

(*Concluded from page 225.*)

DISCUSSION.

DR. W. T. CORLETT, Cleveland, O., said that one or two distinct affections are grouped under the name of pemphigus. We all recognize pemphigus vulgaris, with its classic features, and we also recognize the peculiar form of dermatitis in the newborn, which clinically presents few if any of the features of pemphigus vulgaris. In these cases there is an exudation accompanying the pemphigus, with resulting excoriations, until usually the disease is relieved by death. There is a similar form to this met with in the adult. At the last meeting of the American Dermatological Association Dr. Corlett said that he showed an adult with a bullous eruption which, for want of a better name, he called pemphigus foliaceus, although the case did not present the classical features pertaining to that disease, the lesions resembling more closely the type of pemphigus of the new-born. Most of these cases are fatal. The case he showed in Cleveland subsequently recovered, however. He has under his observation a physician whose brother died of this form of pemphigus about four years ago. This physician has been running down in health during the past year, and has suffered from bullous lesions on the face and hands. This type of the disease is not yet well understood. Dr. Corlett believes it is due to local causes, and that it occurs largely in debilitated subjects. In regard to the occupation of butcher being an etiologic factor, Dr. Corlett said that he has seen the form of pemphigus described by Dr. Zeisler, although he has never associated it with the handling of meat.

DR. JOHN A. FORDYCE, New York City, said that the neurotic theory has never appealed to him very strongly; about the only basis for it is the bullous eruptions in certain forms of leprosy and in other affections of the central nervous system. Dr. Fordyce favored the septic theory. The type of pemphigus which is seen in the new-born, pemphigus neonatorum, has been fairly well proved to be of streptococcic origin, and closely allied to impetigo contagiosa. He has seen pemphigus of a fatal type following injury; such cases are probably of septic origin. The microbic theory, however, will not explain all types, and those may possibly have their origin in some chemical agent.

JAY F. SCHAMBERG, Philadelphia, said that it seemed to him that the so-called neurotic and infectious theories of the origin of pemphigus and pemphigoid eruptions may be harmonized.

There is an abundance of clinical evidence to show that bullous eruptions may be produced by the introduction of animal poisons, by microbic infection, by drugs, and allied agencies. In these conditions there is circulating in the fluids of the body a chemical poison; in the last analysis the several poisons, although from diverse sources, are, perhaps, very closely allied, and produce the same pathologic results. In the bullous eruptions which have been observed from time to time to follow vaccination, the poison may have been introduced in the virus or through the vaccination wound subsequent to vaccination. At any rate there is strong evidence to demonstrate that these acute bullous eruptions are the result of an infection of one character or another; to say acute is to step on rather thin ice, for many of these cases last for months or years.

In the old classic form of pemphigus of long duration and fatal termination, it would appear that we have to deal with an autotoxic poison resulting from the mal-function of one organ or another, and exerting a selective action on nerve cells. Acute anterior poliomyelitis is an infectious disease, the poison of which possesses an affinity for certain cells in the spinal cord; so the poison of pemphigus may possess a similar affinity for certain nerve structures. In many of the bullous eruptions following vaccination, arsenic seems to act as a specific. Dr. Schamberg recently had to deal with an extensive case of this character, and the giving and withholding of arsenic were coincident with improvements and recurrences in the disease. The disease was finally cured, the arsenic acting as much as a specific as does mercury in syphilis.

DR. J. B. KESSLER, Iowa City, Ia., reported that he has had three cases within the past eighteen months. Before that he has not seen a case for five years.

In reference to Dr. Zeisler's statement that avocation probably has something to do with the development of this disease, I might say that the first and second cases were in farmers, aged 46 and 50, who had suffered from the disease for a year and for four years, the lesions in Case 1 being confined largely to the trunk. The third case was in a girl of 16 who was employed in a hotel. At his first examination of this girl he was very much inclined to make a diagnosis of erythema bullosum, but when the patient came back in the course of a month, it seemed clearly pemphigus. Large bullæ came out of the sound skin, one in particular being as large as a hen's egg. Salicin, beginning with 15 grains, t.i.d., and increasing to 30 grains, seemed to do very well. In the two older patients he gave arsenic, salicin, and pretty nearly everything else, without any appreciable benefit.

DR. L. DUNCAN BULKLEY, New York City, reported a most troublesome experience with pemphigus. At the New York Skin and Cancer Hospital there have been one or more cases almost continuously, and even the nurses rebel against receiving them. A butcher had an acute, tense bullous eruption on his hands and said that for many years he had been subject to a recurrent attack at about the same season of the year. The bullæ were usually located on the hands and arms; sometimes elsewhere. They would last for a couple of weeks, and give him much distress. Dr. Bulkley did not think that the man's occupation might have a bearing on the trouble, but he put the patient on an absolutely strict vegetable diet, and gave him nothing but rice, bread and butter three times a day, together with some internal medication. Three days later the acute bullæ had flattened down, and within a week everything had disappeared and he passed from Dr. Bulkley's observation. That is the only instance he can recall in which the handling of meat or possibly meat and nitrogenous diet might have had some bearing on the origin of the disease.

Pemphigus should be distinguished from so-called erythema bullosum. Dr. Bulkley sees many of the latter cases, with a considerable amount of erythema, burning, itching and roughening of the skin; these cases are relatively mild, and yield to treatment, but in true pemphigus, in which bullæ develop on an uninflamed base, often in elderly persons, one is dealing with a rebellious disease, and one that is responsible for most of the deaths in the skin department with which Dr. Bulkley is connected.

He considers arsenic a valuable remedy in this affection, and believes that physicians do not, as a rule, give it often enough or strong enough. If necessary, it should be repeated every two or three hours, six or eight times daily, in the form of Fowler's solution, and pushed until there is gastric or intestinal disturbance. Whatever may be the origin of these cases, he is absolutely convinced that these bullæ are the ultimate result of nerve disturbance, which theory he believes is largely confirmed by the control that arsenic has over these lesions.

DR. A. RAVOGLI, Cincinnati, said that in order to establish the differential diagnosis between dermatitis herpetiformis and pemphigus one must bear in mind the polymorphic and relapsing character of the lesions and the presence of eosinophiles in dermatitis herpetiformis. Dr. Ravogli has under observation in the City Hospital, two girls, one 5 and the other 7 years old, with dermatitis herpetiformis, and in both of these cases the bullæ contain from 23 to 27 per cent. of eosinophiles. In true pemphigus he has found no more than 2 or 3 per cent. of eosinophiles. In dermatitis herpetiformis he has never found any alterations in the urine, while in every case of true pemphigus the urine has been found to be alkaline in reaction, and to contain albumin and casts, and he has no doubt that this is an important factor in the differential diagnosis between the two diseases. It is possible that the leucocytes themselves, after losing their vitality, may act as a poison circulating in the system and produce intoxication.

He agrees with Dr. Schamberg regarding the utility of Fowler's solution in true pemphigus, but he has found that, in dermatitis herpetiformis, arsenic is absolutely useless. True pemphigus, in spite of all manner of treatment, is almost invariably fatal, while his cases of dermatitis herpetiformis have recovered under the use of iron and tonics, together with applications of ichthyol, which he has found extremely beneficial.

DR. JOSEPH ZEISLER, Chicago, said that the purpose of the paper was to call attention to an etiologic element which in previous years had not been clear to him. In 1892 he wrote the article on pemphigus for Morrow's "System of Skin Diseases," and at that time he did not have the impression that an animal poison had anything to do with pemphigus. Since then, observations of that kind have amplified and the cases he reported impressed themselves very strongly on his mind. The pemphigus problem has not been solved by microscopic examination, or by urinalysis, or by chemical examination of the contents of the bullæ. He hoped that in the near future physiologic chemistry will be developed to such a degree that physicians will be able to discover the presence of ptomains and leucomains, which it is not possible to do to-day.

OCULAR NEURASTHENIA.

BY DR. HIRAM WOODS, BALTIMORE.

(*Concluded from page 215.*)

DISCUSSION.

DR. S. D. RISLEY, Philadelphia, said that there can be no doubt that many obscure ocular symptoms are only part and parcel of a general systemic state, call it by what name we may. Dr. Woods' endeavor has been to analyze this general state and to point out some of the more or less specific and local conditions which lie at the foundation of the general ill health and incidentally of the ocular symptoms. Many persons are afflicted with an inheritance of a delicately poised nervous system. Their nervous equilibrium is readily upset by the disturbing influences and difficulties which beset their pathway in life. While the average individual is able to push aside or to surmount adverse circumstances, to others they become veritable lions in the way which terrify and shock them. Pelvic disorders in these delicate women upset their poise and the upset may manifest itself in many ways. Dr. Risley had seen many examples of ocular disturbance which he could not relieve until the pelvic trouble was removed. A woman, aged 36, who sought relief from asthenopia, had a refraction error which needed correction, but while her glasses proved a necessity, that is to say, she could not get on without them, some features of her asthenopia persisted. A slight right hyperphoria was corrected by a trial prism, but after a short time the hyperphoria was left instead of right, and this gave place to exophoria or esophoria. She was postmistress in the village where she resided and had to stand many hours daily. When

the day was over she went home in a state of general exhaustion, and with fronto-occipital headache which radiated down the spine and vertex pain. She was unable to use her eyes for any near work and suffered from backache. Dr. Risley requested her to consult her family physician regarding the possibility of uterine disease or displacement and received a negative reply. She was then sent to a gynecologist with a letter stating that pelvic disturbance might be the possible cause of her general fatigue and the irregular ocular symptoms, and requesting him to support the uterus with a pessary as a therapeutic measure. He did so and the asthenopia promptly disappeared. Dr. Risley is sure that patients with asthenopia accompanied by variable and irregular binocular imbalance not infrequently are victims of uterine displacements and pelvic adhesions.

Dr. Woods, with every other experienced ophthalmic surgeon, recognizes the very great importance of accurate corrections of any error of refraction in every case of asthenopia, and the accuracy is peculiarly necessary in neurotic individuals. This is true also of persons whose daily routine not only requires the more or less constant use of their eyes at a near point, but who by virtue of their constant activity, usually in illy ventilated buildings, in constant contact with other people, close the day with a sense of general malaise, and return to their homes with their nervous energies exhausted, and half intoxicated by breathing for many hours an atmosphere poisoned by impurities. It is doubtless true that the careful, accurate correction of existing ocular defects is in some sense peculiarly important for all such persons; but it is folly to expect that glasses are to remedy the evils which result directly from the unfortunate environment of their daily life. We can not as oculists for a moment decry the great need for correction of refraction errors, nor are we for a moment blind to the great blessings which the modern use of spectacles has been to the present generation of mankind. The personal crusade, made in their behalf in recent years, in so far as the claims made are true, has been taught by all special teachers for more than a quarter of a century; is deeply imbedded in the ophthalmic literature of the period and is worked out practically and carefully in the daily routine of consulting room and clinic; but, while this is done, we must not be blind to the serious influence exerted by dyscrasia of various sorts, and by the ill health resulting from the care and wear of daily toil and responsibility in setting up ocular disturbance. It is by no means always easy to fix definitely the *fons et origo* of a symptom-complex. While it is true that eyestrain may lie at the foundation of a complex group of symptoms which constitute ill health, it is equally true that asthenopia may be but one phase of the symptom-complex resulting from an impaired metabolism or some specific infection sapping steadily the general vitality.

DR. H. D. BRUNS, New Orleans, said he had in mind two cases of interest in this connection. A nurse in the Charity Hospital for two or three years constantly had one dilated pupil. She was examined and theorized on by a large number of doctors. Finally, after several years, abdominal symptoms called attention to the case again, and she was freed of a large tapeworm and immediately got rid of the dilated pupil. There had been no symptoms pointing to the real trouble for a long time. Another case that illustrates the point that Dr. Woods makes was that of a young girl presenting classical asthenopic symptoms. Careful examination showed very low hypermetropic error. Dr. Bruns assured the parents that he could not imagine that such a low error could give rise to the symptoms. In less than ten days she developed typhoid fever, and he was glad that he had not put glasses on her, thinking that her complaints were due to eyestrain.

DR. A. I. DERDIGER, Chicago, reported a case of a man, aged 50, complaining of nervous trouble, whose case he was informed had been diagnosed by neurologists as classical neurasthenia. He found that the patient's eyes would vary every few minutes so far as the tests were concerned. There were six degrees of esophoria, with one degree left hyperphoria. These tests were repeated several times during the next week with the same results and the addition of compound hypermetropic astigmatism. The following week he found two more degrees of esophoria with one more degree of hyperphoria. The patient complained of a feeling as though the eyes were drawn too close together. He would lose the lines. That occurred so frequently during his daily work that he was obliged to give up his position as editor on a pharmaceutical journal. Dr. Derdiger decided not to prescribe glasses but to continue examining the muscles daily to ascertain the full amount of hyperphoria. He finally prescribed his correction simple hyperopia, with a four degree prism base in, to be used three times a day for muscular exercise. That treatment was continued two weeks and during the last week the daily tests showed one degree left hyperphoria and no esophoria and no astigmatism. The patient was then able to read without losing the lines and the feeling of the eyes being drawn in disappeared. The neuralgic attacks and all neurasthenia from which he had suffered disappeared. Dr. Derdiger concluded from the history of the patient's failure to be cured of the functional neurosis by general practitioners and neurologists that the neurasthenia was due to eyestrain, which diagnosis was confirmed by repeated examinations of six months' duration and the wearing of glasses for hyperopia and presbyopia, together with muscular exercise with prisms for six months and no return of symptoms of neurosis, the patient being able to resume his editorial work.

DR. LUCIEN HOWE, Buffalo, N. Y., said that we are apt to be refractionists rather than physicians. We are, especially in this country, constantly looking for the results of what we call eyestrain. We are looking for the effect the eye has on the body; we too often forget the effect which the body has on the eye. Gastric conditions are affected by the eyes, and the eyes are affected by gastric conditions. This is seen in anemia and in imperfect elimination of urea. A test of the eye is a very small part of our work. We should make blood tests; examination of the urine goes without saying; examination of the stomach contents is often absolutely necessary. We have no right to treat a patient for headache until we know the condition of the stomach. We have no right to treat chlorotic girls unless we know the amount of anemia. First of all, we should be physicians.

DR. HENRY GRADLE, Chicago, said that too many colleagues seem to adhere to the idea that all asthenopia is due to refractive errors and that imperfect refraction always causes asthenopia. But asthenopia and headaches are a reaction of the nervous system in the production of which we must study not merely the ocular error, but also the susceptibility of the nervous system itself. Many healthy persons tolerate considerable ametropia without distress or with but very slight annoyance. On the other hand, an unstable nervous system may react severely to slight errors of refraction or a mild conjunctivitis or blepharitis. Anemia, poor nutrition, prolonged lactation of mothers, confinement indoors, minor toxic conditions after infectious diseases, and especially gastrointestinal disturbances, may render a nervous system intolerant to minor ocular anomalies, particularly so in subjects predisposed by bad heredity. In some of the most persistent instances Dr. Gradle found no optic imperfection or ocular anomaly whatsoever, at least at the time of his examination. Many observations have taught him that concentration of attention on the eyes or injudicious warning regarding possible danger may prolong indefinitely the distress caused in a susceptible subject by some transient condition long passed when seen by the oculist. These cases border on hysteria. Hence, in all examinations for asthenopia one should act not merely as oculist, but also as physician and sometimes, too, as psychologist.

PROF. CARL HESS, Würzburg, Germany, agreed with Drs. Risley and Howe. He has sent a good many such patients into the mountains and has seen many of these complaints disappear completely with this treatment. Call it eyestrain or something else, but the patients wear glasses without any relief; but when sent into the mountains of Switzerland for a few months they come back without the eyestrain. It is very important that we should be physicians as well as oculists.

DR. S. L. LEDBETTER, Birmingham, Ala., said that these cases occur in young mothers who are apparently healthy in every respect. Twenty years ago a young mother reported to him for eye trouble, stating that she was unable to read, play the piano or ride in a carriage without having headache. He found practi-

cally nothing on examination, no muscular abnormality, possibly 0.25 diopters hypermetropia. He assured her her headaches were not due to the eyes. She was then nursing her second child. When the child was sufficiently old she was relieved of the headaches, but with the third child had the same trouble. She passed over a period of ten years during which she had no trouble. About five years ago a fourth child came and she had a repetition of the trouble. Since then she has had no further trouble until the past year, when he fitted her with a pair of weak presbyopic lenses for reading. She was a nervous, high-strung young woman, very intellectual, and Dr. Ledbetter attributed the trouble to her general nervous condition at these times.

Dr. G. E. de Schweinitz, Philadelphia, said that the discussion did not concern the very large class of cases in which there can be no possible doubt that the entire neurasthenic outbreak is a symptom of eyestrain, if one might be permitted the use of this word in this connection, or, more accurately, is one of the symptoms by means of which the results of constant accommodative effort or muscular imbalance are interpreted. These and all other cases in which examination shows the necessity for glasses or the treatment of the ocular muscles, should, of course, receive the fullest consideration from the refractive standpoint. But this is not all, and it is time that these patients were classified. In a large number of cases the neurasthenia, in all its phases, whether interpreting itself through the eyes or elsewhere, is an expression of a degraded nervous control. Many of these patients have what Dr. Dercum calls smallness of the circulation, perhaps an actual under-development. It has seemed to Dr. de Schweinitz that in a large number of these cases the caliber of the retinal vessels is not as great as it should be in persons of the age and weight examined. He spoke with great deference and uncertainty, as it is a subject which should be investigated. He said that Dr. Woods is perfectly correct in pointing out that a certain number of nervous patients are really made neurasthenic by constantly having their attention directed to their eyes, although their eyes are perfectly healthy and there is not the slightest reason, either from them or from the general condition, why they should not be used. Far from encouraging these patients to take an eye rest-cure, they should be encouraged to gain confidence and use their eyes within reason. Professor Hess has referred to the great class of patients who seem to be cured, not only of their eye symptoms, but of their other complaints, only when they are sent away from their surroundings. Unhappily, as he also points out, the symptoms are apt to return with return to original modes of life. By all means let us be, as Dr. Howe suggests, physicians as well as oculists. No one can be a decent oculist unless he has the instincts of a physician. It is the greatest possible mistake to study the patients to whom Dr. Woods has referred from the standpoint of one organ alone. Every possible source of nervous irritation, coming from the eyes as well as from other organs, should be eliminated, and with the removal of underlying pathologic causes we are likely to get better results.

Dr. Hiram Woods, Baltimore, referred to the point made by Dr. Gradle, to which he alluded in the body of his paper. It is the state of the public mind regarding the eyes as the starting point of all head pains. An instance occurring in his office a few years ago illustrated this. A lady brought her 16-year-old daughter to him and introduced the child as follows: "She has headaches. I want you to see if the eyes are the cause. If they are not, I shall get Dr. A. (a rhinologist) to remove the adenoids; if that is not the case, I shall have Dr. B. (a gynecologist) make an examination, and if he finds nothing I shall consult our family physician." In other words, this society woman had undertaken to decide for herself the meaning of a mere symptom, and had stripped her family physician, one of the best Baltimore ever had, of his function as medical advisor. It was simply a case of specialism overdone; and specialists are in a great measure responsible for this state of the public mind. It will require years and a great deal of teaching to undo this; but very much of the pernicious effects of such reasoning can be neutralized if the specialist who first sees the case takes broad enough view to think beyond his own special domain.

PARAFFIN INJECTIONS NEAR THE EYES.

BY DR. A. E. DAVIS, NEW YORK.

(*Concluded from page 218.*)

DISCUSSION.

Dr. E. A. Thompson, New York City, said that embolism, which is undoubtedly the complication most to be feared, is hardly likely to occur unless the paraffin is injected into the cellular tissues as in the correction of "saddle-back" deformities of the nose.

The case reported by Dr. Davis of extrusion of the paraffin from Tenon's capsule is, he said, certainly unique. It must have been due, as Dr. Davis suggests, to injury of the capsule at the time of the operation, and yet the structure of the capsule is so delicate that it is easy to understand how such laceration might occur. Dr. Thompson does not implant a ball in Tenon's capsule, for the formation of a stump, but uses a paraffin ball of a high melting point instead of the glass ball after the method of Mr. Mules. It seems to him that the advantages of the paraffin over glass in this operation are very great. It is less irritating and more apt to be retained; there is no danger from breakage, and, most important of all, if the scleral lips separate, the mass may be reduced in size by cutting away some of the paraffin with a small probe slightly heated, and the sclera will heal. Of course, the first attempt may not be successful, but the process can be repeated, and it usually happens that the greater part of the ball can be saved. If a ball of glass or other unyielding substance be used, and a single suture gives way, the sclera will be gradually retracted and the ball will be cast out.

Dr. Frank C. Todd, Minneapolis said that the advance in surgery by the use of paraffin injections is such that we would dislike to give up this practice in certain cases, though no surgeon would be willing to do this work, if he felt that there was a possibility of some of the dire results taking place which have been reported by Dr. Davis and in the paper of Professor Uhthoff of Breslau (*Berliner Klin. Wochschr.*, 1905, xlviii, 1461).

Dr. Todd said that he had never seen any ill effects, but about two years ago he received a letter from a patient whom he never saw, asking what could be done for relief when too much paraffin had been used and where it had extravasated into the cheeks.

Another objection to the use of paraffin has recently been recorded; two cases by Heidingsfeld (*Jour. Cutan. Dis.*, November, 1906) and a case by Armsby (The Journal A. M. A., May 18, 1907) shown at the Chicago Dermatological Society. "This consists of a connective tissue overgrowth at the site of the paraffin injection, as a result of the long-continued slight irritation produced by the presence of the paraffin." Tumors developed at the sites of the injection, which were hard, dense, purplish in color and gradually increasing in size. Sections of these tumors show a connective tissue overgrowth like a granuloma, with many cells and other evidence of inflammatory process presenting many similarities to keloid.

The second case reported by Dr. Davis not only shows the dangers of the use of paraffin, but also the fact that it is absolutely of no service in forming a good stump for the prothesis. The pressure exerted by the artificial eye is bound sooner or later to change the shape of this mass and thus make the eye look worse than if simple enucleation had been performed. Since, however, gold balls are found to be entirely satisfactory in this work, there is every reason for the non-employment of paraffin. In a considerable experience in performing the Mules or the Frost-Lang operation, he has found success common, but not so with paraffin, which has the disagreeable faculty of forming a point, working its way through the mucous membrane and coming out. Sewing up the opening only forces it in another direction, and he has consequently discarded its use altogether.

How, then, can these accidents be avoided? It is evident from the collection of cases and the writings of Eckstein that this danger is much reduced, though not always excluded, when paraffin of a high melting point (above 50 C.) is used. More important still is it that the paraffin should be introduced by means of a screw syringe so that the paraffin in the non-liquid

state is carried through the needle and at the will of the operator placed in small, solid but soft strings, and when inserted for saddle-nose firm pressure should be exerted on each side of the nose to prevent its entrance into the surrounding tissue.

DR. S. H. LARGE (*The Laryngoscope*, April, 1907) describes Professor Gersuny's latest method of injecting paraffin. Under aseptic precautions a hypodermic needle is introduced, to which is attached a small syringe through which is introduced Schleich's solution, followed by aspiration at the same time. If the solution remains clear, showing that no blood vessels have been entered, he attaches a large syringe containing paraffin, which has been allowed to become semisolid, injecting slowly and taking care not to inject too much at one sitting. Gersuny, who was the originator of this work, does a tremendous amount of it, and although previous to the adoption of this practice he had one case of embolus of the lung and another of blindness, Dr. Large quotes Gersuny as saying he has not had a case with a bad symptom since using this method.

DR. F. J. PARKER, New York City, said he had had some experience in the use of paraffin in Tenon's capsule. He performed a number of these operations in which the paraffin sphere was used instead of the glass ball, and in most of these cases, a little over one-half, the paraffin came out again. Some times it would come out entire and in others it would slowly exude around the sutures. He also recalled seeing a case in which paraffin was injected for the correction of saddle-nose. This was followed by marked swelling of both eyelids. He did not know what the ultimate result was. In another case of Mules' operation in which the paraffin was used instead of the glass ball, two weeks later there was sympathetic trouble beginning in the other eye. A few days later the paraffin came out and there was subsidence of the sympathetic symptoms.

DR. HARMON SMITH, New York City, said that he had seen and made numerous injections in the neighborhood of the orbit. In any hypodermic injection if you have an air embolus it will do harm. All liquid substances tend to assume a globular form, and in order to overcome that the paraffin should not be in a semisolid condition, but in solid form, injected in a cylindrical condition. The larger the lumen of the needle the less danger there is of embolism. He injects it away from the soft tissues of the orbit and canthus of the eye, toward the tip of the nose. To prevent regurgitation into the soft tissues he has the assistant make pressure on the nasal bones so that the paraffin can not go back until it has settled. As to inflammatory conditions, he has injected it into the peritoneal cavity of a rabbit, killed the rabbit and had the tissues examined, and there was no evidence whatever of inflammatory reaction—no formation of fibrous tissue. One should avoid, of course, luetic patients. As regards the technic, he said he believes that is where the majority of men who have had bad results have failed. Surgical cleanliness is as essential as in any other operation; sterilization of the surface and of the hands, as well as of the instruments. It should be injected slowly and hyperinjections should be avoided. The tissues must be given an opportunity to take care of the foreign substance and not be too much on the strain at one time. As regards the place of injection, it should be beneath the skin, not in the skin, which causes anemia and may be followed by necrosis.

DR. J. L. BORSCH, Philadelphia, said that the remarks made by those who had preceded him do not apply to the operation he has described for the extirpation of the lachrymal sac by first injecting paraffin therein. In this operation paraffin is injected through a natural channel—the tear duct—into a toughened lachrymal sac (in order to outline it), and not into the tissues. Besides, the paraffin is immediately removed enclosed in the sac, and thus this operation is unattended by the dangers mentioned. He also called attention to the fact that the instrument he employs is not one that injects the paraffin by means of a screw, but by means of pressure of one hand, leaving the other hand of the operator free, whereas if the screw instrument were employed one would require an assistant to aid in making the injection and the amount of pressure could not be controlled.

DR. W. B. MARPLE, New York City, said that a year or so ago he saw an account by one of the house surgeons of the Massachusetts General Infirmary in regard to the use of the paraffin spheres, and after reading that article he used it in some half dozen cases. His experience with the paraffin balls is very similar to that of Dr. Parker's. In about one-half they remained in and in the other half were extruded.

DR. A. E. DAVIS, New York City, said that perhaps 120 degrees is too low a melting point for the paraffin. If it is lower than this, as in the first case he reported, the man may become overheated and the paraffin became soft. He was glad to hear reported Dr. Parker's case of sympathetic irritation. The more of these cases we have the more, he said, we will hear of this sympathetic irritation, just as where you put the glass ball or any other foreign substance in the capsule of Tenon. Concerning Dr. Smith's reference to having placed paraffin in the peritoneal cavity of rabbits without producing inflammatory reaction, Dr. Davis said that it is well known that the peritoneum will tolerate foreign substances better than any other tissue in the body, so that he does not think that the comparison applies very well to the eye.

PREMIUMS PAID TO EXPERIENCE.

BY DR. F. T. ROGERS, PROVIDENCE, R. I.

(*Concluded from page 223.*)

DISCUSSION.

DR. LEWIS H. TAYLOR, Wilkes-Barre, Pa., agreed with Dr. Rogers that refraction is a very important part of the work of the oculist. From an estimate made some years ago, he thought that about 50 per cent. of all his eye patients received glasses, but he now finds, in summing up the results of more than three times as many as Dr. Rogers has taken for his study that he has only 47 per cent. of refraction cases. Taking them by thousands, the highest percentage reached in any consecutive thousand is 54.7 per cent. Dr. Taylor agreed that refraction work is of utmost importance, but he did not agree with the idea sometimes expressed that the majority of oculists are doing poor work and do not know how to fit glasses accurately. The idea expressed by Dr. Rogers under "The Personal Equation of the Examiner" is that as one advances in experience and practice and consequently is able to do better work, he nevertheless does poorer work, that is, "he, in turn, gets too busy for accurate work and it passes to another." This certainly should not be. Dr. Taylor emphasized that glasses should not be given to a patient from one examination and test, and he very rarely does so. Even with people beyond 40 who come for glasses for near work only, he insists on a second test, at least, except in those rare cases where the exigency of time or distance require the work to be done in one day. In case of patients under 40 he insists on a cycloplegic. Again and again, when patients have refused the cycloplegic on account of time needed, he has refused to attempt to fit glasses.

Dr. Taylor has done refraction work with atropia for twenty-five years and knows no better method. He has tried other methods and other cycloplegics, but has come back to atropia. Occasionally to save time for the patients he uses homatropin. He has used atropia many thousands of times and has never had glaucoma result from its use. As to full correction of hypermetropia, Dr. Taylor finds that patients can not see accurately and comfortably with full correction, and therefore he does not give it. His patients are better off without it. He does not believe in the "fogged vision" theory. He believes in giving patients the glasses that give the best sight and this, as a rule, not always, gives the greatest comfort. He agreed with Dr. Rogers in giving full correction in myopia.

To obtain good results the oculist should impress on his patient the fact that he is to keep on coming until fitted. If this rule were followed there would be less inaccurate work from overhaste in fitting glasses. That the proper fitting of glasses will relieve headaches in the vast majority of cases is well understood. It is also well understood by most of us that the fitting of glasses will not cure all cases of headache and that the oculist must be a physician and not a refractionist merely.

Dr. Taylor said that he abandoned the use of protargol some years ago because of one case of marked argyrosis. He has used argyrol freely in many cases with no bad results as yet. In trachoma he has had many excellent results from expression with Knapp's and Noye's forceps. Much time, he said, can be gained in the treatment of this affection by an operation under a general anesthetic. It is useless to attempt this operation under local anesthesia. In regard to corneal ulceration, he has found two agents effectual, the pure tincture of iodin and the galvanocautery. He has not seen the brilliant results claimed by Dr. Risley and Dr. Rogers from the use of subconjunctival injections of a physiologic salt solution in macula cornea, though he has been pleased with dionin, and has found good results follow the persistent use of yellow oxid ointment.

Dr. E. E. Holt, Portland, Maine, urged that physicians tabulate their cases and make deductions therefrom, and thereby contribute toward making a standard method of recording cases and making statistics therefrom.

By the assistance of a standard form for keeping record of cases physicians treat their patients better and therefore make better practitioners of medicine. Dr. Holt has his forms interleaved so that the record can be extended and all the correspondence relative to the case can be pasted to the stubs of these interleaves, so that everything pertaining to the case is right at hand for reference. In Dr. Holt's practice the proportion of refraction cases to the whole number of cases is about the same as that given by Dr. Rogers. If ametropia constitutes two-thirds of the cases as they come to us, it is important that papers and discussions should be more numerous on this subject.

Dr. Allen Greenwood, Boston, suggested that putting on record a cure of embolus in the central artery is hardly justifiable. In a man of 55 the question of whether it was an embolus or obstruction of the central artery due to endarteritis unobservable by the ophthalmoscope is one to be considered. The fact that the vision cleared up would indicate that it was not a case of embolus, because an embolus large enough to stop in the central artery of the retina would hardly go on so far beyond the primary branches as not to leave a segmental loss of the visual field. Cases of sudden stoppage of the central artery from spasm of the vessel subject to endarteritis are much more common and frequently relieved.

Dr. Robert L. Randolph, Baltimore, said that he has been using the discs of Wood in the estimation of errors of refraction for many years and has found them eminently satisfactory. The whole procedure takes scarcely more than an hour, and with a drop of eserin, 2 grains to the ounce, after the examination is finished, the patient in a few hours is comparatively comfortable. In some of these cases he failed to give relief, and thought that maybe it was due to some impurity in the discs and so used atropin or homatropin, but practically never found any difference in results.

Dr. Oscar Wilkinson, Washington, felt that one is hardly justified in doing refraction on any subject under 40, without the use of a mydriatic. As a rule, he uses homatropin; in exceptional cases, atropin. Concerning the effect of chalazion on the refraction of the eye, he recalled the fact that Dr. H. D. Bruns, in the *Ophthalmic Record*, 1906, reported a case in his own person in which the amount of astigmatism and acuity of vision were both changed by the presence of a chalazion. He has found Dr. Dixon's fogging method of advantage in some cases, but as the author has stated, if the strong lens is given at first it will often increase the asthenopic symptoms instead of relieving them. It is better to give gradually increasing lenses and to inform the patient that the lenses are temporary and will have to be changed very soon. In reference to disease of the sclera, he mentioned a case of scleritis due to malaria, in which the administration of quinin following two or three chills cleared up the case immediately. The patient had had the condition for more than a year and had been to several oculists.

Dr. A. E. Bulson, Fort Wayne, Ind., referred to a paper published some years ago in which he reported the use of homatropin in 3,000 cases, and advocated its use as a cycloplegic. He began using atropin on these patients and found that there were considerable increases of error. To make his results more accurate, he determined, whenever a patient came in who had been refracted under homatropin, to try atropin, and he was surprised to find more error under the stronger cycloplegic, and at once began to modify his views on the subject. Dr. Bulson objected to the term mydriatic. It is a mistake for ophthalmologists to speak of a mydriatic when they mean a cycloplegic; a cycloplegic is a mydriatic, but the converse is not necessarily true. Dr. Bulson claimed that in the treatment of purulent ophthalmia there is nothing that will take the place of silver nitrate. He recently had two patients treated by the nitrate method, both aggravated gonorrheal ophthalmia, in the adult, in whom he was able to save the vision. Two other cases of less virulence, treated with argyrol, ended disastrously.

Dr. Bulson said that many ophthalmologists are too careless in keeping complete records of their cases. He uses the card index system and even places on the card the amount paid or the fee for operation agreed on. Another thing of importance is the ability of the ophthalmologist to greet his patient when he enters the examination room. It has been Dr. Bulson's practice for years to have his assistant bring in the name and, before the patient comes in, he has the record before him and knows what the condition is.

Dr. A. R. Baker, Cleveland, said that one thing that ophthalmologists are apt to forget is that they are physicians and not merely refractionists. Often the prescribing of glasses is the smallest part of the problem, although it often consumes much time and the expenditure of much gray matter. Another thing he thought that oculists often fail to explain is that they do not expect younger patients to wear glasses always. They are merely a temporary aid to help out the present trouble. It may be to finish out a college course or a piece of literary work, or until the occupation is changed to one requiring less eye work, or it may be until the health is improved. Feeling keenly the necessity of treating the general condition of the patient, Dr. Baker not only prescribes medicines, but has diet lists published. He tries to impress on these patients that if they expect to get well they must stick to their family physician and follow his instructions.

As to cycloplegics, he has not refracted a case under 40 in the last year without using a cycloplegic. As a routine, he uses homatropin first, but tells the patient that this is an expedient to save him time. If there is any contradiction in the results of the examination with the ophthalmometer, retinoscope and test type, he insists on using atropin.

Dr. L. A. Alleman, Brooklyn, does not believe that there is any drug that will entirely relax the accommodation. He said that if the doctor had used atropin first and homatropin later he would have duplicated the results he obtained. In his experience, patients who have worn a full correction of their refractive error, determined under any cycloplegic, will gradually accept an increase in the correction at subsequent examinations, frequently without a cycloplegic. In some cases he has been unable to produce cycloplegia by the use of atropin and other cycloplegics, although he continued their use for many weeks.

Dr. J. L. Borsch, Philadelphia, said that it is a well-known fact that overeating or eating improper food sooner or later impairs the functions of the intestines; the food ferments, putrefaction takes place, and toxins are produced and absorbed in greater quantities than the system can cope with, and serious lesions result. It is easy to understand how so delicate an organ as the eye is affected by the irritation caused by these toxins; how the ciliary muscle, the retina, chorioid and particularly the vitreous readily respond to the irritation caused by this autointoxication. The intestinal antiseptics relieve for a time, but aggravate the intestinal condition, for they affect alike the intestines and the germs. He places these patients on a diet of sour or fermented milk, with the result that the symptoms complained of entirely disappear. It would seem, therefore, that a diet of some form of fermented milk rich in bacilli of lactic acid is a good remedy for those cases of muscæ volitantes and asthenopia of intestinal origin.

Dr. F. T. Rogers, Providence, explained the difference in statistics in the errors of refraction by stating that in Providence is made all the jewelry sold in Atlantic City, and a large

number of patients are employed at this work, which is very trying on the eyes. The object at which he aims is comfort to the patient, and if he tests a patient with homatropin comfort is what he is after. If he fails to give relief, then he uses atropin. As to the diagnosis of embolism of the central artery, the ophthalmoscopic picture presented was typical of that condition. The diagnosis was confirmed by an eminent oculist of Boston, who saw the case on the second day.

LICHEN PLANUS.

BY DR. M. B. HARTZELL, PHILADELPHIA.

(*Concluded from page 226.*)

DISCUSSION.

DR. WILLIAM S. GOTTHEIL, New York City, confirmed Dr. Hartzell's observations with one of his own. The case was one of extensive lichen planus; practically the whole body was involved except the face, and including the palms and soles and the visible mucosa. The patient was given arsenic in heroic doses by hypodermic injection, up to 40 minims of a 1 per cent. solution of arseniate of soda and carbolic sublimate ointment locally. Subsequently, he developed some joint symptoms, for which the salicylates were given, and coincident with this his joint symptoms as well as his eruption began to improve. Dr. Gottheil hesitated at the time to attribute his improvement to the salicylates, but wished to place the case on record in confirmation of Dr. Hartzell's observations.

DR. JOSEPH ZEISLER, Chicago, said that four years ago, at the meeting of the Association at New Orleans, and a year later at the Niagara Falls meeting of the American Dermatological Association, he took the ground that arsenic has ceased to be—as it was formerly considered—a specific for lichen planus, and to-day he feels like going one step farther and saying that arsenic is absolutely contraindicated in lichen planus, in spite of the teaching of the elder Hebra, who considered it a valuable remedy in this affection. He said that he has seen a fairly large number of cases of lichen planus, and his experience is that, while the lesions may disappear under the systematic use of arsenic, the sufferings of the patient are intensified thereby out of all proportion to those caused by the disease itself. Many years ago he discontinued the use of arsenic in lichen planus, and he does not expect to treat a case with that remedy again. He expressed surprise that Dr. Hartzell did not give any credit to the internal use of mercury in lichen planus, particularly the protoiodid, which Dr. Zeisler considers of much more value than arsenic. Nevertheless he is glad of the suggestion regarding the salicylates, because mercury, after all, is not an indifferent drug; many patients have a peculiar antipathy against it, and it is well to have another drug to fall back on. He felt like repeating what he said four years ago, that the *x*-rays have an almost miraculous effect on some of these cases, particularly those of the verrucous type. In some of his cases of lichen planus annulatus only one lesion was present; in others there were two or three little rings, very peculiar looking, easily mistaken for syphilis, and consisting simply of an agglomeration of small lichen planus papules.

DR. J. B. KESSLER, Iowa City, Iowa, said that his experience with arsenic in lichen planus corresponded with that of the last speaker, while mercury at times has proved very beneficial. His experience with lichen planus has been very limited. Locally, he prefers applications of Vleminck's solution, beginning with a weak solution and gradually increasing it up to full strength.

DR. GEORGE T. JACKSON, New York City, said that he regarded arsenic as almost a back number in dermatology, though it is very commonly given, by the general practitioner, for all diseases of the skin. In acute conditions arsenic certainly aggravates the trouble, and lichen planus, in its acute form, is certainly made worse by it. Lichen planus is a peculiar disease; it comes suddenly and goes suddenly, and it is sometimes difficult to say how much good treatment really does. It has disappeared under rhubarb and soda, the protoiodid of mercury or the salicylates. In the chronic form arsenic, or the salicylates, or mercury, are of little value. In such cases the *x*-rays, curettage or other energetic treatment must be used.

DR. ROBERT W. TAYLOR, New York City, expressed the opinion that sufficient attention is not paid to the value of the old Boeck treatment in cases of acute and very generalized lichen planus. In an article which he wrote many years ago in the first volume of Dr. Bulkley's Archives of Dermatology, cases were reported which showed the almost magical effects of that treatment on the itching and hyperemia. The treatment consists of 20 drops of dilute nitric acid, taken before meals, and 15 grains of the chlorate of potash, taken in water after meals. He particularly recalled a recent case in which the result of this treatment was most wonderful, and he has seen many similar instances since. He did not know how these remedies act in these cases, whether as anti-rheumatics or otherwise, but Dr. Boeck's idea was that they add oxygen to the blood. Dr. Taylor said that his paper, in which this method of treatment was outlined, was the first paper on lichen planus ever written in this country. That was about 1871 or 1872.

DR. L. DUNCAN BULKLEY, New York City, said that last year at Boston he spoke very strongly on the treatment of lichen planus, and stated then that for the past thirty years or more the remedies mentioned by Dr. Taylor have been his almost constant stand-by in lichen planus. While he should not hesitate to give the salicylates a trial, he had the greatest confidence in the use of nitric acid and chlorate of potash. His method is to give the chlorate of potash up to 10 grains, dissolved in water immediately after eating, and the nitric acid thirty minutes or an hour later; beginning with three or four drops of the strong acid three times daily, he increased it even to six or eight drops, if necessary. He is sure that this method of treatment, in the acute form of lichen planus, relieves the irritation and prevents the development of new lesions. He has not given arsenic in lichen planus for many years, excepting in some long-standing cases that resisted other methods of treatment, in some of which arsenic, if administered properly and with other remedies, acts beneficially. He seldom gives it alone; almost always in combination with iron and alkalies. He agreed that the *x*-ray and the hypostatic current are of very great value in the old verrucous forms of lichen planus, especially of the lower extremities. He has seen such patches melt away almost like magic under the influence of those agencies. He has given mercury in some cases of lichen planus, but has seldom found it necessary to resort to it, on account of the good results from the treatment first mentioned.

DR. W. T. COLLETT, Cleveland, Ohio, agreed as to the uselessness of arsenic. After visiting Dr. Crocker's clinic, a few years ago, and seeing psoriasis treated with salicylates, he put a number of patients on the drug, but was disappointed in the results. From what he had seen in London, however, he did not expect anything very striking. He hoped the salicylates would prove more effective in lichen planus.

DR. M. B. HARTZELL, Philadelphia, said that his paper was on the salicylates in lichen planus, not the treatment of lichen planus. It was not his purpose to discuss at length the treatment of this disease, nor could he agree with the statement that arsenic is entirely useless. In one of his cases of lichen planus arsenic was very effective and the salicylates only moderately so. In one instance the pruritus and general discomfort improved very markedly under the arsenic. He does not think lichen planus dependent on a rheumatic diathesis. He considers mercury a valuable drug in some cases. One of his patients who had suffered from lichen planus for eighteen months had been very thoroughly *x*-rayed, with the sole result of stirring up the lichen planus and making it much worse. That was his experience with the case of the woman whose photograph he showed; this case was of the verrucous type, with lesions on the leg and thigh. The *x*-rays set up a dermatitis and increased her discomfort very much. He would not resort to it again in lichen planus. The carcinate type of lichen planus was referred to by one of the speakers. He recently saw a case with two rings, one on the forearm and one on the face. The two patches were not larger than a dime, both ring-shaped, the rest of the body being entirely free.

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Book Notices

PRINCIPLES AND PRACTICE OF DERMATOLOGY. Designed for Students and Practitioners. By William Allen Pusey, A.M., M.D., Professor of Dermatology in the University of Illinois. Illustrated. Cloth. Pp. 1021. Price, $6.00. New York and London: D. Appleton & Co., 1907.

This work is divided into two general parts: The first, covering 165 pages, is devoted to the principles of dermatology, while the remaining 850 pages constitute the second division, dermatologic practice. The general principles of dermatology have been given much more space than is usual in works of this kind, an innovation that seems eminently desirable. General treatment in particular has been considered most fully. The second division, dealing with practice, is made up of fourteen sections, in which under a rational classification the various dermatoses are considered. That the work is thoroughly up to date is evidenced by the description of meralgia paresthetica and uncinariasis of the skin and by the discussion on the *Spirocheta pallida* and on Wright's method of treatment. The author's description of the principles and technic of opsonic therapy, while brief, is a remarkably clear exposition of a subject that is somewhat involved. The illustrations are numerous and unhackneyed and are such as distinctly increase the value of the book; a large number of them are from the author's private collection. The sections on *x*-ray dermatitis, eczema, pemphigus and syphilitic eruptions are particularly commendable, as are also the chapters devoted to tuberculosis of the skin and to malignant growths. The various forms of malignant tumors of the skin are very completely illustrated. The author has been conservative in his references to literature; the bibliography is not "as complete as money will buy," but it is confined—wisely, we think—to references to important, or recent, contributions to dermatologic literature. While the work will be a notable addition to the library of the dermatologist, its lucid style and conciseness of description will make it of great value to the general practitioner and student. It must be regarded as an important contribution to dermatologic literature.

ESSENTIALS OF OBSTETRICS. By Charles Jewett, A.M., M.D., Sc.D., Professor of Obstetrics and Gynecology in the Long Island College Hospital, assisted by Harold F. Jewett, M.D. Third Edition Revised and Enlarged. Thirty Illustrations and Five Colored Plates. Cloth. Pp. 413. Price, $2.25 net. Philadelphia: Lea Bros. & Co., 1907.

The present edition represents a complete revision of Professor Jewett's excellent work. Much has been rewritten and new matter has been added. The work is a valuable one to the student who needs to master the elements of obstetrics before undertaking the study of larger works. It is also a convenient book for the practitioner who may wish to review the subject.

MANUAL OF OPERATIVE SURGERY. By John Fairbairn Binnie, A.M., C.M. (Aberdeen), Professor of Surgery, Kansas State University. Flexible Leather. Pp. 743. Price, $3.00. Philadelphia: P. Blakiston's Son & Co., 1907.

Two years after the appearance of this excellent manual, a third edition has been called for. This corresponds in excellence with the previous editions. A number of illustrations have been added and the volume has been increased by 95 pages. Descriptions of a few classical operations on the genitourinary system and anus, and a diagram showing the relation of the stomach and pylorus, duodenum, pancreas, etc., have been added.

Medicolegal

Provisions for Treatment of Seamen.

Circular No. 40, dated June 18, 1907, of the United States Treasury Department, Public Health and Marine-Hospital Service, relative to contracts for care of seamen, etc., gives a list of the contracts made for the care of seamen entitled to relief from this service for the fiscal year ending June 30, 1908, and provides, among other things, that it must be cited, giving its number and date, on all bills for the treatment and maintenance of seamen, as the authority for any expenditure incurred under its provisions. Charges will be allowed for the day of admission of a hospital patient, but not for the day of discharge or death. The right is reserved by the Secretary of the Treasury to terminate any contract whenever the interests of the service require it. All relief must be furnished in accordance with the regulations of the Public Health and Marine-Hospital Service; and, except as provided in paragraphs 445 and 448 of the regulations of the service, no allowance will be made for expenditures incurred at any port not named in this circular.

On admission to a contract hospital of a patient with a disease or injury which, in the opinion of the medical officer, the acting assistant surgeon or attending physician, will require more than twenty days' treatment in hospital, and it appears that the patient can travel in safety without an attendant, the officer issuing the permit will at once request authority from the bureau to transfer such patient to the nearest marine hospital, unless such authority be already given by this circular in the paragraph relating to the work at the particular station.

The attention of customs officers, commissioned medical officers, acting assistant surgeons, or other physicians in charge of patients of the Public Health and Marine-Hospital Service at contract stations, is hereby called to the necessity of discharging patients promptly on the termination of the necessary hospital treatment, and without awaiting the expiration of the period authorized in the permit.

The term "contagious diseases," wherever occurring in this circular, includes only those diseases which, under usual municipal regulations are required to be treated in a special hospital for contagious diseases.

Officers and enlisted men of the United States Army and Navy may be admitted for care and treatment as patients of the service on the written request of the proper military or naval authority, the rate of charge to be 50 cents a day at United States marine hospitals, and the regular contract rate to be charged at stations of the second and third class. Patients of the above-named class are not subject to the provisions regarding transfer to marine hospitals.

The rate of charge for the care of seamen from foreign vessels (admitted under act of March 3, 1875) will be $1 a day at United States marine hospitals. At second and third class stations seamen from foreign vessels will be cared for at contract rates. Patients of the above class are not subject to the provisions regarding transfer to marine hospitals.

Liability for Injury from Carbolic Acid Sold Without Prescription.

The Supreme Court of New York, Appellate Term, says in the case of Horst vs. Walter, that the plaintiff's wife went to the defendant's drug store and asked for something to wash out a wound or cut which her husband had received on his knee. The clerk gave her a small bottle bearing the words, among others: "Poison. Carbolic Acid." She took this home and applied it to the wound. The result was that the knee was burned and turned black, and caused serious trouble. On chemical analysis the solution was found to contain between 86 and 90 per cent. of carbolic acid. Two questions were presented: 1. Was the act of selling the preparation, under the circumstances shown, one that would have constituted legal negligence if done by the defendant himself, instead of his clerk? 2. Was this a case where the employer should be held responsible for the act of his clerk?

On the first point it has been held in New York state that a druggist is liable in negligence for damage caused by the sale of poisonous medicine without proper label or instructions. Wohlfahrt vs. Beckert, 27 Hun. 74, affirmed, 92 N. Y. 490. In the present case there can be little question that it was a negligent act for the druggist to sell a solution of carbolic acid of such strength. Section 67 of the Sanitary Code prescribes that: "No phenol, commonly known as carbolic acid, shall be sold at retail by any person in the city of New York, except on the prescription of a physician, when in a stronger solution than 5 per cent." But, aside from such prohibition of the Sanitary Code, the court does not think there can be any doubt that it is an act of negligence for a druggist, when asked for a solution to wash a wound, to sell a preparation of such a dangerous character as was furnished in this case.

On the question whether the act of the clerk was chargeable to the defendant there was little room for doubt. The gen-

eral rule is that an act done by the servant in the prosecution of the business that the servant was employed by the master to do is chargeable to the master. That this rule applies in the case of the preparation and sale of drugs has been held in this and other states. Thomas vs. Winchester, 6 N. Y. 400; Norton vs. Sewall, 106 Mass. 143. In the former of the two cases just cited the defendant was held liable for injuries flowing from the act of his assistant in business in putting up belladonna, labeled as "dandelion," which, through the medium of several intermediate dealers, was ultimately sold to the plaintiff and used by her, to her serious injury.

It was suggested by the defendant that the plaintiff was guilty of contributory negligence, but the court sees no ground for any such contention. The plaintiff had a right to suppose that the defendant and his employés would perform their duty with care, and, when applied to for some solution to wash a wound, that they would furnish something, if not efficient, at least harmless, and was warranted in applying it without further inquiry.

Upholds Law Taxing Traveling Doctors.

The Court of Criminal Appeals of Texas says, on the appeal of W. K. Fouts vs. State, that by the act of the Twenty-fifth Legislature a tax was levied on doctors and surgeons who traveled as specialists in the practice of their profession. By virtue of subdivision 13 of said act (Acts of 1897, page 49, chapter 18), this tax was levied and the following section 14 levied a tax on the same class but who practiced their profession only locally. So it will be observed that the difference between the two sections or subdivisions of said occupation tax law is found in the fact that one class applies to traveling physicians, etc., while the other applies to local physicians. By acts of the Twenty-sixth Legislature, page 320, chapter 380, subdivision 14 was repealed. It related only to that particular clause of the act of the Twenty-fifth Legislature which pertained to the physicians, etc., who were localized in this practice.

It was contended in this case that, by the repeal of said subdivision 14, the provisions of the repealing act were sufficiently broad and comprehensive to repeal subdivision 13 with reference to traveling physicians. Such was not the intention of the legislature. By the terms of the act of the Twenty-sixth Legislature, subdivision 14 is specifically enumerated, and only subdivision 14 is mentioned as having been repealed. There was nothing in the contention of the defendant, therefore, that the act as to traveling physicians was repealed.

It was also urged that there was no license law under which the defendant could be punished, because the license was not particularly described. But the court can not assent to that proposition. Article 112 of the Penal Code of 1895 provides: "Any person who shall pursue or follow any occupation, calling or profession or do any act taxed by law, without first obtaining a license therefor, shall be fined in any sum not less than the amount of the taxes due and not more than double that sum." Unless the law specifically prescribes what a license is, or may contain, a receipt for the occupation tax is regarded as a license, and, unless the legislature prescribed otherwise a receipt for the tax will operate as a license.

Evidence in Personal Injury Case.

The Supreme Court of North Carolina says that in the personal injury case of Allen vs. Durham Traction Company, the defendant's first three exceptions were on the ground that the trial court permitted an osteopath to testify as an expert in regard to the nature of the fractures of the bones of the woman plaintiff, and to testify as to the amount paid him for his services to her, in considering the amount of damages. The trial court found on the evidence that the witness was an expert. This conclusion was not reviewable. State vs. Wilcox, 132 N. C. 1131; Geer vs. Water Co., 127 N. C. 355, and cases there cited. The court decides as to the admissibility of the witness as an expert; the jury decides as to the weight to be given to his testimony. Flynt vs. Bodenhamer, 80 N. C. 207. The amount paid him for his services was, of course, not binding on the jury, but they could take into consideration the reasonable worth of the attention and nursing rendered by him in passing on the measure of damages. Even if it had been true that this witness could not, under section 4502 of the Revisal of 1905, have recovered for his services to the woman in an action at law, this was not an action by him to recover compensation. His services were not criminal (State vs. Biggs, 133 N. C. 729), and, the plaintiff having paid him for his services, if they were reasonably proper attention under the circumstances, the jury could take their value into consideration. Laws 1907, c. ——, has incorporated the "North Carolina Society of Osteopaths" as a recognized branch of healing, but aside from that, if the services of the witness had been availed of to alleviate pain or in nursing, the reasonable amount paid for such services was a matter for consideration by the jury. If, in a case like this, a bill for medical services were barred by the statute of limitations, its payment could not be enforced at law, but, if paid, it would be a proper item for consideration by the jury in assessing the damages.

Verdict of Insanity Not Conclusive of Lunacy or Unfitness to Make Defense to Criminal Charge.

The Supreme Court of Kansas holds, exparte Wright, that a verdict of insanity, found under chapter 99 of the General Statutes of that state of 1901, does not conclusively show that the person therein named is a lunatic, or mentally unfit to answer or make defense to a criminal charge against him.

The court says that the purpose of this law is to provide procedure whereby a judicial determination may be had of whether or not the person being examined is a proper subject to become a patient in the state hospital for the insane. By its provisions any person may be admitted who, by reason of brain sickness, has become incapable of caring for his own estate, or is a fit subject for care and treatment in a hospital for brain diseases, or insanity. The meaning of the word "insane," as used in this law, is expressly limited, and applies to any degree of mental derangement for which the patient might be admitted to the state hospital for care and treatment. This includes every phase of a disordered mind, from temporary nervous excitement to acute insanity. It can not be said, therefore, that a verdict under this statute, finding the person examined to be insane, necessarily means that he is bereft of all reason or incapable of protecting his own interests in a lawsuit.

It is the law of this country, independent of any statute, that a defendant shall not be compelled to answer to or defend against a crime, if mentally or physically unable at the time to do so in a rational manner, when such disability has developed after the alleged commission of such crime, but in the absence of a statute to the contrary, the duty of determining whether or not such disability exists rests with the court whose duty it is to hear such answer or defense.

When the attention of a court is called to the fact that the defendant about to be arraigned before it is unable, because of mental disability, to make proper defense to the accusation against him, it is, doubtless, the duty of the court to take notice of the suggestion, and make such inquiry concerning it as will fully protect the rights of the accused. On such an inquiry the findings of a court in a lunacy proceeding, and any other proper evidence, may be received and considered.

Restriction on Physicians as Witnesses in Wisconsin.

The Supreme Court of Wisconsin says that in the personal injury case of Hocking vs. Windsor Spring Company, the incompetency of a physician as a witness in the case was alleged under chapter 426 of the Laws of Wisconsin of 1903, which provides that no person shall have the right to collect any fees for medical or surgical services or "to testify in a professional capacity as a physician or surgeon, or insanity expert . . . unless he or she holds a license" or certificate and diploma, or a membership in a medical society, duly recorded as prescribed, and that nothing in the act shall restrict courts from receiving the testimony of any person in a criminal action.

It was undisputed that this witness was not a resident of Wisconsin and had not complied with the provisions of this statute. The witness testified that he found that the plaintiff's eye had been injured by a cut from some object which passed into it and penetrated the lens; that he washed the eye, sent the plaintiff to a hospital, and there removed the splinter from the eye with a magnet; and that he afterwards

removed the eye. These facts were not disputed in the case. It was averred, however, that this statute disqualified him to testify to any of the facts above stated because he was within the class of persons practicing medicine or surgery, who are debarred from testifying "in a professional capacity as a physician or surgeon, or an insanity expert in any case," except criminal actions. But the court is of the opinion that this contention gave to this statute a wider scope than its context warrants.

Applying the language of the statute to the subject covered by the legislation, the court says that it is clear that persons practicing medicine and surgery are thereby deprived of the right to collect any compensation for such services, and "to testify in a professional capacity as a physcian, or surgeon, or insanity expert," unless they comply with the law. The phraseology of the law is quite clear and direct in expressing a legislative intent that such persons should be disqualified to testify as experts in their professional capacity. Such a disqualification, however, would not affect their competency to testify to facts not within the field of an expert. As to such matters, their qualifications would be governed by the rules applicable to any other person.

It was averred that the evidence of this witness was in its nature expert evidence of a physician and surgeon. The evidence, however, disclosed that, aside from the statement that the splinter penetrated the lens, the witness testified to nothing but what was within the observation of any person, and this statement had no bearing on the controverted issues litigated. It could not have operated to the defendant's prejudice, since it was practically admitted that the eye was so seriously injured as to necessitate its removal. Under these circumstances the court finds nothing in the testimony of the witness which should have been excluded from the case.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below:

Medical Record, New York.

July 6.

1 Operations for Urinary Calculi. G. E. Post, Beirut, Syria.
2 Future of Medical Journalism. J. E. Pilcher, Carlisle.
3 *Syphilitic Tumors of the Breast. J. S. Bissell, New York.
4 Prevention of Venereal Disease. A. H. Baker, Elmira, N. Y.
5 Chronic Perforating Ulcer of Bladder. H. K. Leake, Dallas, Texas.
6 *Fibroid Sarcoma Under Enzyme Treatment. W. T. Doran, New York.

3. Syphilitic Tumors of Breast.—Bissell gives the history of five cases of syphilitic tumors of the breast observed by him. He concludes that, as a rule, late syphilitic lesions of the breast can be differentiated easily by careful diagnosis, and certain breasts can be saved from operation. In cases of doubt we should resort to the rapid administration of mercury by hypodermic injection, and see what effect it has on the tumor.

6. Enzyme Treatment in Recurrent Fibroid Sarcoma.—Doran describes a case of fibroid sarcoma of the uterus in which panhysterectomy was done and all the involved glands were removed. The disease recurred and was treated by injections of the enzymes, trypsin and amylopsin. The result was an apparent cure, the enlarged glands disappearing and the patient feeling entirely well at the time of writing.

New York Medical Journal, New York.

July 6.

7 *Climate of New Mexico, Nature's Sanatorium for Consumptives. P. M. Carrington, Fort Stanton, N. M.
8 *Auscultation Ratios in Pulmonary Tuberculosis. J. S. Billings, Jr., New York.
9 *Pneumonia in Infants and Young Children. W. P. Northrup, New York.
10 Histogenesis of Tumors, Particularly Cancer. H. Oertel, New York.
11 Malignant Growth of the Mouth and Lips. G. G. Ross, Philadelphia.
12 *Pathognomonic Eye Symptoms in Rabies. W. R. Coakley, New York.
13 Medical Experiences: The Doctor. T. Bannan, Syracuse.

7. Climate of New Mexico.—While Carrington devotes considerable space to the discussion of the climate of the entire state of New Mexico, he describes more particularly the conditions at the government reservation at Fort Stanton. He says that New Mexico, as a resort for consumptives, has the following advantages: (a) Altitude; (b) low relative humidity; (c) large percentage of sunshine, advantageously distributed as to season; (d) cold or cool nights; (e) moderate wind movement; (f) small precipitation; (g) rarity of fog; (h) pure air; and (i) well drained soil with low percentage of soil moisture.

8. Auscultation Ratios in Tuberculosis.—A rather extensive experience in the examinations of chests of persons suspected of having incipient pulmonary tuberculosis leads Billings to claim that it seems probable that the relative intensity of the breath and voice sounds over the upper and lower portions of the upper right lobe of the lung remains about the same in health, being about 5 to 4, or 5 to 3. When the sounds at the apex are physiologically intensified, there is a corresponding intensification of the sounds over the rest of the upper lobe, the ratio being about the same is in normal chests. In incipient tuberculosis, with beginning infiltration of the right apex, the signs at the apex are intensified while those over the rest of the right upper lobe remain normal. The ratio between them is thus distinctly increased to 2 to 1, or even higher. Such an increase suggests the presence of infiltration, possibly tubercular, at the apex of the right lung.

Billings uses a modification of Oertel's stethoscope. It consists of a binaural stethoscope, the bell of which may be either the ordinary hard rubber form or the combination Bowles-Stanley phonendoscope. One of the soft rubber tubes of the instrument is closed by means of a ligature. In the course of the other rubber tube there is introduced the metal combination tube which constitutes the essential part of the Oertel stethoscope. This consists of two metallic tubes, the one being graduated vertically, the other transversely in millimeters. The third, outer metallic tube glides up and down over the other two for half their length. By rotating the middle tube by means of its milled head, and sliding the outer tube downward, an opening measuring 40 mm. may be obtained. The more intense the sound, the larger the opening required to obliterate it. The patient should be examined in a standing position, as changes in the sounds seem to be less readily recognized when the patient is lying down. The instrument should be applied with the outer sliding tube closed and the middle and inner ones separated by an interval of 2 mm. The sliding tube is then pushed slowly down until the particular sound (voice, breath) has disappeared. The area of the opening necessary to obliterate the sound is then noted by means of graduations on the tubes. This procedure is carried out at the apex of the lung in front and behind, and also over the second space and third rib in front, one and one-half inches from the sternum and just above the upper angle of the scapula behind. Considerable practice and experience were necessary before satisfactory results were obtained. Much depends on the patient. With a person of intelligence the procedure is relatively easy; with one of low intelligence who will not speak or breathe twice in the same way, it is often impossible to obtain any satisfactory results. The method is said to be not adapted for the use of the general practitioner, but would necessarily be limited to those making a specialty of the recognition of early cases of pulmonary tuberculosis.

9. Pneumonia in Infants.—Northrup summarizes his paper as follows: Diagnosis. The early manifestations of pneumonia in infants are: Sudden onset; prostration ("dopey"); fever; disturbed respiration, pulse ratio; rales. These are sufficient for diagnosis. The further signs and symptoms are in the order of their practical value and appearing: Diminished respiratory murmur; bronchovesicular respiration; bronchial voice and breathing; bronchial "whiff"; dulness; cough. Treatment. Purgation, calomel and castor oil, or castor oil alone in full dose. Careful feeding to avoid flatulence. Plentiful use of water for drinking and bathing. Quiet and undisturbed rest. Fresh, cool, flowing air. Antipyretics, bathing, sponging, cool drinks, no coal-tar products. Heart stimulants, wine, whisky, strychnin. Early recognition of complications and their treatment.

12. **Pathognomonic Eye Symptoms in Rabies.**—The sign noted by Coakley is a pinpoint contraction of one or both pupils, which is uninfluenced by light, atropin, or cocain. Shortly before death the pupil dilates suddenly to about the size of a large matchhead. The symptoms were observed only in rabid dogs.

St. Louis Medical Review.
June 29.

14 Study of Deaths from Pneumonia. O. H. Brown, St. Louis.
15 Sugar in Cancer. T. H. Evans, Philadelphia.

The Lancet-Clinic, Cincinnati.
July 6.

16 The Strenuous Life and Race Suicide. H. V. Sweringen, Fort Wayne, Ind.
17 Cases of Probable Maternal Impressions. J. M. Walton, Memphis, Tenn.
18 Phthisis Pulmonum and Abortus Provocatus. T. Howard, New York.

American Journal of Obstetrics, New York.
June.

19 Fibroid Tumors of Uterus in Pregnancy, Labor and the Puerperal State. M. D. Mann, Buffalo.
20 *Case of Quadruplets. F. H. Washburn, Jefferson, Mass.
21 *Induction of Labor in Contracted Pelves. J. B. Cooke, New York.
22 Interruption of Pregnancy for Causes Other Than Pelvic Contraction and Eclampsia. C. Jewett, Brooklyn.
23 *Retroversion Flexions of Uterus in Relation to Pregnancy. C. W. Barrett, Chicago.
24 Case of Tight Knot of Umbilical Cord and Consequent Antepartum Death of Fetus. R. T. Frank, New York.
25 Pelvic Tuberculosis. J. R. Goodall, Montreal.
26 Sodium Citrate in Infant Feeding. D. W. Prentiss, Washington, D. C.
27 Two Cases of Chorioepithelioma Malignum; Hysterectomy; Recovery. H. N. Vineberg, New York.

20. **Quadruplets.**—In the case reported by Washburn, three of the children were attached by separate cords to what seemed a common placenta, while the fourth child was attached by its funis to a distinct placenta. Each fetus was enclosed in its own amnion.

21. **Induction of Labor.**—Cooke says that the pelvis of every pregnant woman should be measured carefully, and the physical development of the husband should be learned. Beginning with the end of the seventh month of gestation, the Mueller method of cephalometry, as modified by Hirst, should be practiced at weekly intervals until the induction of labor is clearly indicated by reason of disproportion between the fetal head and the pelvic brim. With a true conjugate of 9.5 cm. labor should be induced at the thirty-sixth week. If the true conjugate is only 8 cm. labor should be induced also at the thirty-sixth week, and aided by forceps, or version, according to the character of the pelvic deformity.

23.—See abstract in The Journal, Dec. 1, 1906, page 1849.

The American Journal of Medical Sciences, Philadelphia.
June.

28 *Tuberculin Immunization in Pulmonary Tuberculosis. E. L. Trudeau, Saranac Lake, N. Y.
29 *Chronic Polycythemia and Cyanosis with Enlarged Spleen (Vaquez's Disease.) J. M. Anders, Philadelphia.
30 *Transient Spontaneous Glycosuria and Its Relation to Alimentary Glycosuria. T. B. Barringer, Jr., and J. C. Roper, New York.
31 *Manifestations and Diagnosis of Infantile Scurvy. L. E. La Fétra, New York.
32 Treatment of Fracture and Dislocation of Vertebræ. A. Nicoll, New York.
33 *Most Frequent Hernia in Childhood and Its Significance. E. M. Corner.
34 Clinical Resemblance of Cerebrospinal Meningitis to Disseminated Sclerosis. W. G. Spiller and C. D. Camp, Philadelphia.
35 *Etiologic Factors in Recurrent Facial Palsy. T. J. Orbison, Philadelphia.
36 *Bacteriology of Blood in Typhoid. W. Coleman and B. H. Buxton, New York.
37 *Influence of Iodin Preparations on Vascular Lesions Produced by Adrenalin. L. Loeb and M. S. Fleisher, Philadelphia.
38 So-called Hysterical Affections of Abdomen. G. P. LaRoque, Richmond, Va.

28. **Tuberculin Immunization in Tuberculosis.**—Trudeau believes that all knowledge points to immunization in the treatment of pulmonary tuberculosis, and that while much remains to be learned about the tuberculin treatment, he inclines to the belief that the production of tuberculin immunity by the mild clinical method is capable of favorably influencing the course of chronic tuberculosis or prolonging life, and in many cases of aborting a commencing infection or extinguishing the smoldering fires of a chronic infection.

29. **Chronic Polycythemia.**—Anders reports three cases of the so-called Vaquez's disease, a study of which leads him to the conviction that defective venous tonus plays an important rôle in the pathogenesis of the condition. He reviews the cases reported in the literature, which, with his own, gives a grand total of 53 cases.

30. **Transient Spontaneous Glycosuria.**—Barringer and Roper made a very careful study of 20 cases of transient glycosuria, which were discovered between 1895 and 1901. At the end of five years 20 per cent. of these patients had become diabetic; 15 per cent. had become suspicious cases, and 10 per cent. somewhat suspicious; 55 per cent. had remained free from diabetes. Eight of 11 cases of spontaneous glycosuria, in which sugar recurred, became diabetic or probably diabetic. The authors claim that the alimentary glycosuria arising from glucose or cane sugar, provided the test is properly conducted, and repeated at intervals, affords a valuable aid to prognosis, in cases of spontaneous glycosuria. A positive test is of much more value than a negative test. Alimentary glycosuria *e saccharo* is essentially diabetic in its nature.

31. **Infantile Scurvy.**—La Fétra reports seven cases of infantile scurvy which show the more common as well as the unusual phases of this affection. These infants were taking, respectively, sterilized milk, pasteurized milk, milk that was not heated when made, but overheated when warmed for the bottle feeding, pasteurized peptonized milk, a weak milk mixture made up with starchy food, with heated milk. La Fétra says that to sterilize milk is often necessary, but it should be adopted rather as a mode of treatment than as a method of feeding.

33. **Hernia in Childhood.**—Corner found as the result of a rather extensive series of observations on 3,300 cases, that multiple hernias are far more frequent in children than in adults, and that the majority of hernias in children are acquired and not congenital. The variety of hernias seen most often is the median ventral, which in Corner's series of cases appeared in 61.3 per cent., and when in combination as well, in 87.1 per cent. He believes that the majority of hernias in children arise from the increased intra-abdominal pressure, which results from the gas production of intestinal fermentation. The younger the child, the shorter the time required for the development of a hernia. Clinical experience shows that raised abdominal pressure is directly related to the frequency of inguinal hernias, and probably also to their initiation. Corner's tables show that the true proportion of acquired to congenital hernias is about two to one.

35. **Recurrent Facial Palsy.**—Orbison claims that there is one cause of recurrent facial palsy that has not been emphasized sufficiently, and that is a defective condition of the intestinal tract, associated with a faulty elimination of waste products by way of the kidneys, the lowered tone of the nerve being a secondary and consequent symptom. He reports two cases.

36. **Bacteriology of Blood in Typhoid.**—Bacteriologic examinations of the blood of typhoid and suspected cases have been made a routine practice in many hospitals, and the number of cases reported, including the cases of Coleman and Buxton, reaches a total of 1,802. Of this number 75 per cent. gave a positive result. The examinations were made at all stages of the disease, and by different methods. The authors conclude from an analysis of these cases that the typhoid bacillus is present in the blood of every case of typhoid fever throughout its course, but that the bacillemia in typhoid does not constitute a true septicemia, but it represents an overflow of bacilli from the lymphopoietic organs. The clinical picture of typhoid results only from infection of these organs by the typhoid bacilli, with invasion of the blood stream and destruction there of vast numbers of bacilli. Furthermore, the endotoxins of the typhoid bacillus are not cumulative in action, and convalescence from the disease itself is established within a few days after the disappearance of the bacilli from the blood.

37. **Iodin Preparations, Vascular Lesions and Adrenalin.**—Loeb and Fleisher found that it is not possible, by the use of various iodin preparations, to prevent the arterial changes produced in rabbits by the injection of adrenalin. In fact, when

large doses of iodin preparations were injected, the arterial changes produced by adrenalin were more marked than when adrenalin was used alone. Injections of potassium sulphocyanid in fair sized or relatively large doses, did not cause an increase in the arterial lesions produced by adrenalin. In fact, they seemed to exert a preventive influence on the adrenalin.

The Northwestern Lancet, Minneapolis.
June 15.

39 Eclampsia. A. J. McCannel, Minot, N. D.
40 La Diete Hydrique in Treatment of Gastrointestinal Diseases. R. O. Beard, Minneapolis.
41 *Treatment of Retrodisplacement and Prolapse of Uterus. A. W. Abbott, Minneapolis.
42 Rattlesnake Bite, with Recovery. F. C. Baier, Minneapolis.
43 *Obturator Hernia. E. D. Keyes, Winona, Minn.

41. Retrodisplacement of Uterus.—Abbott shortens the uterosacral ligaments through an abdominal incision, by folding each ligament on itself.

43. Obturator Hernia.—Keyes observed a case of obturator hernia in a man 51 years of age. The man was seized suddenly with intense pain, referred at first to the abdomen, later extending down the left thigh. Careful examination located the center of the disturbance in the left groin, with the most painful point below the pubic crest, and internal to the saphenous opening. The patient consented to an operation about twenty-four hours after the onset of the symptoms. A knuckle of the small intestine was found so firmly wedged into the obturator foramen that it could not be dislodged. The membrane was nicked and the intestine returned, after having turned in a small gangrenous spot.

The Therapeutic Gazette, Detroit.
May.

44 *External Use of Adrenalin in Neuralgia, Neuritis and Reflex or Referred Pain. H. G. Carleton, Atlantic City.
45 Ocular Manifestations in Venereal Diseases. A. Brav, Philadelphia.
46 *Tubercle Bacilli Products in Treatment of Tuberculous Lesions. G. R. Pogue, Greeley, Colo.
47 Examination of Feces. G. H. Jones, Toledo.
48 Treatment of Internal Hemorrhages. G. Werley, El Paso, Texas.
49 *Treatment of Local Infections. H. S. Wieder, Philadelphia.
50 Aseptic Operative Technic. J. E. Cannaday, Hansford, W. Va.

44. Use of Adrenalin to Combat Pain.—Carleton has used adrenalin externally to combat the pain accompanying functional neuralgias and neuritis. The only absolute failures noted were in cases of neuralgia, springing from toxic conditions. Reflex neuralgias of great severity were relieved for periods varying from a few hours to several months, and the pains of gout, articular and muscular rheumatism, and myalgia are relieved almost entirely for a considerable time after the application of the adrenalin. In nearly 100 cases one application of an adrenalin ointment relieved the patient of pain in cases of recurrent facial neuralgia for periods of from one month to six months. Carleton says that the quantity of a 1 to 1,000 ointment of adrenalin to be used in any affection of a peripheral nerve should not exceed from one to two minims, by inunction, except in case of the sciatic nerve, when two or three minims may be used. Larger quantities often produce ischemia which might prove injurious. The application of the ointment must be made directly over the affected nerve.

46. Serum Therapy of Tuberculosis.—Pogue speaks well of the use of tubercle bacilli products in the treatment of tuberculosis. He says that the most noticeable feature about the arrested cases is the very few relapses that have occurred. In those cases where a relapse did occur it was the result of disobedience to instructions on the part of the patient.

49. Treatment of Local Infections.—Wieder advises immediate incision over the point of greatest tenderness, followed by carbolization of the wound, and the application of a wet bichlorid dressing. In incising for palmar infections of the fingers the incision should be continued until pus or bone is reached. The Bier method of treatment, he thinks, is especially worthy of further trial, in the case of milder panaritia of the cutaneous or paraungual type.

Journal of Medical Research, Boston.
May.

51 *Serum Anaphylaxis in the Guinea-pig. F. P. Gay and E. E. Southard, Boston.
52 *Study of Normal and Diarrheal Stools for Detection of Dysentery or Allied Organisms. J. W. Fisher, Middleton, Conn.
53 *Study of Agglutination. J. W. Fisher.
54 Application of Card Cabinet System in Storage of Microscopic Slide Preparations. E. E. Tynser, Boston.
55 Estimation of Leucocytes from Stained Blood Smears. R. C. Larrabee, Boston.
56 *Case of Oidiomycosis. W. B. Coley and M. Tracy, New York.
57 *Absorption from Peritoneal Cavity. B. H. Buxton, New York.
58 Solid Teratoma of Mediastinum. H. A. Christian, Boston.
59 *Hemolytic Properties of Organ and Tumor Extracts. R. Weil, New York.
60 Study of Toxins of Bacillus Prodigiosus. M. Tracy, New York.
61 Agglutinins and Precipitins in Antigonococcic Serum. J. C. Torrey, New York.
62 *Degree and Duration of Passive Immunity to Diphtheria Toxin Transmitted by Immunized Guinea-pigs. T. Smith, Boston.

51. Serum Anaphylaxis.—Gay and Southard advance a theory in regard to the remarkable susceptibility to intoxication by horse serum of guinea-pigs, which have been previously injected with small quantities of horse serum; this theory, however, does not seem to make the complex conditions involved any clearer. The most interesting part of their work relates to the lesions produced by this intoxication. The lesions consist of multiple hemorrhages, especially in the stomach, cecum, lungs and heart, associated with widespread fatty changes of the capillary endothelium. The heart muscle, the skeletal muscle, the nerves and the epithelium of the stomach show striking local fatty changes.

52. Detection of Dysentery.—Fisher studied 37 cases of asylum dysentery and in practically all of those with blood or bloody mucus in the stools was found the Flexner type of the dysentery bacillus. In 44.4 per cent. of normal stools Fisher found a dysentery-like organism, bacillus F., which differs from dysentery, colon and typhoid bacilli; hence it may be classed with the so-called pseudo-dysentery group.

53. Agglutination.—Fisher makes the interesting observation that when more than one bacillus is used to immunize animals, less agglutination is produced for each bacillus than when only one kind of bacillus is used for immunization. The simultaneous immunization with various bacilli produces, however, specific agglutinins for each organism.

56. Oidiomycosis.—Coley and Tracy describe a case of generalized blastomycosis in a man 27 years old, who, several months after getting his left foot injured with a clam shell, suffered from an attack of pain in the back which was regarded as lumbago and was followed by pain with marked swelling over the dorsal region of the left foot; in a few days fluctuation and a small sinus formed, while two small swellings appeared on the outer aspect of the right foot. These crusted and on removal of the crusts there was found pus-like matter in the center. About a week later still similar lesions developed on the face and simultaneously numerous subcutaneous swellings appeared over various parts of the body, but especially on the thighs and arms, varying in size from that of a hazelnut to that of a small egg. They usually broke spontaneously after a few days. Cough appeared and rapid emaciation. Microscopic examination of the lesions showed granulation tissue with leucocytes, and giant cells and spherical and budding blastomycetes, some of the giant cells containing several organisms. Similar forms were found in pus of the abscesses and pure cultures of the organism were obtained. Blood culture was uniformly sterile. The authors think that the infection entered through the lungs, although they recognize the possibility that the infection may have entered the blood current through the wound in the foot.

57. Absorption from Peritoneal Cavity.—Buxton reports further on experiments of absorption from the peritoneal cavity, in this case of typhoid bacilli in immunized rabbits. He finds that an immunized rabbit does not dispose of sublethal quantities of living bacilli more rapidly than normal rabbits, nor is it more resistant to endotoxins. On this account he believes that the immunity may be due to an increased capacity of the phagocytes, especially the macrophages, for taking up bacilli, but he does not make it clear whether this increased capacity is inherent in the phagocytes or due to the new formation of opsonins. It is regarded as advantageous that the bacilli are destroyed within the cells because the endotoxins then first come into contact with the substance of the cells instead of being discharged directly into the fluid of the body.

59. Hemolytic Properties of Tumor Extracts.—Weil finds that necrotic tumors contain a hemolytic substance which is different from that obtained in extracts of normal organs or of growing tumors, and which probably is the result of necrosis in which dialysable hemolytic compounds appear to be formed. He naturally suggests that the anemia of malignant tumors probably will be found to be due in part to the action of such products.

62. Immunity to Diphtheria Toxin.—Smith shows that by testing the resistance to diphtheria toxin of the offspring of female guinea-pigs injected with a toxin-antitoxin mixture as used in standardizing diphtheria serum, we have a method for determining the persistence of active immunity in the body of breeding females. The tests so far carried out by Smith show that there is no immediate relation between the severity of reaction on the part of the body and the degree of active immunity produced. While a severe disease produced by toxin alone results in the transmission of no immunity to the offspring, a single injection of a toxin-antitoxin mixture, causing no local or general symptoms, may induce active immunity persisting for several years. At present the significance of this fact can not be made clear, but it is suggested that possibly there may be a dissociation of the toxin-antitoxin compound and that the large amount of toxin—38 minimum fatal doses—thus introduced may be used by the body to produce immunity. Growing out of this the suggestion presents itself that similar neutral mixtures possibly may be used to produce active immunity in the human subject; the great value of substituting for passive immunity in exposed children an active immunity extending over a longer period is self-evident. Is such immunity attainable with so little difficulty as in the guinea-pig?

University of Pennsylvania Medical Bulletin, Philadelphia.

May.

63 *Heart Disease. C. N. B. Camac, New York.
64 *Preservation of Deep Sensibility of Face After Destruction of Fifth Nerve. R. H. Ivy and L. W. Johnson, Philadelphia.
65 *Case of Aneurism of Abdominal Aorta. W. Pepper, Philadelphia.

63. Heart Disease.—Camac says that rate, rhythm and intensity taken together, not singly, may give indication of threatened compensation, or incipient organic lesion of the heart or blood vessels, and that tricuspid insufficiency is an effort of Nature to correct disease of the left side of the heart. Unfortunately, it occurs more often than is suspected, hence is not diagnosed early enough to permit of the institution of effective treatment.

64. Preservation of Deep Sensibility of Face.—Ivy and Johnson summarize their paper as follows: The fifth nerve conveys fibers of sensibility to light touch, changes in temperature, and pain from those parts generally recognized as being within the area of distribution of the said nerve. The seventh nerve conveys fibers of deep or pressure sensibility from the muscles which it supplies with motor fibers. The muscles of mastication, which derive their motor supply from the fifth nerve, probably are also furnished with fibers of deep sensation by that nerve.

65. Aneurism of Abdominal Aorta.—Pepper reports one case and reviews the postmortem notes of 10 other cases of aneurism of the abdominal aorta. The interesting features of his case were the great size attained by the aneurismal mass, the character and severity of the pain, and the extreme emaciation of the patient. The aneurism measured 10 c.c. in length and was of corresponding width.

New York State Journal of Medicine, Brooklyn.

May.

66 Syphilis. J. Ewing, New York.
67 Work of the New York State Cancer Laboratory. R. Park, Buffalo.
68 Parasitism and Infection in Cancer. H. R. Gaylord, Buffalo.
69 Immunity Against Cancer in Mice. G. H. A. Clowes, Buffalo.
70 Medical Charities in Manhattan and the Bronx (Concluded). F. L. Lattimore, Philadelphia.
71 History of the Medical Society of the State of New York. J. J. Walsh, New York.

June.

72 *Danger Signals from the Skin. L. D. Bulkley, New York.
73 *Toxic Nephritis Dependent on Surgical Conditions. M. Jacobson.
74 New York State Medical Library. A. Vander Veer, Albany.
75 State Aid for Medical Libraries. S. Baker, Utica.
76 Endocardial Murmurs and Their Meaning. E. E. Cornwall, New York.
77 Doctors in State Hospitals. R. M. Elliott, Willard.
78 History of the Medical Society of the State of New York (Continued). J. J. Walsh, New York.

72.—This article appeared in full in THE JOURNAL, May 25, 1907, page 1740.

73.—See abstract in THE JOURNAL, March 2, 1907, page 822.

Chicago Medical Recorder.

June.

79 *Extravesical Versus Intravesical Methods of Removing Prostatic Obstruction. W. Andrews, Chicago.
80 Acute Diffused Gonorrheal Peritonitis. C. G. Buford, Chicago.
81 *Mesosigmoiditis and Its Relation to Gynecologic Affections. E. Ries, Chicago.
82 Tubercular Infections of Faucial Tonsils. C. M. Robertson, Chicago.
83 Prevention of Obstetric Lacerations. H. D. Roehler, Chicago.
84 Repair of Both Eyelids by Means of Single Split Flap in Carcinoma of the Lids. E. F. Snydacker, Chicago.
85 The Mouth, Nose and Throat in Their Relations to Stomach and Intestines. O. J. Stein, Chicago.

79.—See abstract in THE JOURNAL, Jan. 27, 1906, page 305.

81.—See abstract in THE JOURNAL, June 8, 1907, page 1987.

Western Medical Review, Omaha.

May.

86 Management of Placenta Prævia in Country Practice. A. E. Engelbus, Wakefield, Neb.
87 The Newer Physiology of Digestion. L. Crummer, Omaha.
88 Practical Treatment of Inebriety. T. D. Crothers, Hartford, Conn.
89 Reflex Neuroses from Eyestrain. D. C. Bryant, Omaha.

Medical Sentinel, Portland, Ore.

May.

90 Practical Application of Roentgen Rays in General Practice. C. W. Botsford, Chicago.
91 Is the Spirocheta Pallida the Specific Organism in Syphilis? A. Tilzer, Portland.
92 Prognosis and Treatment of Enlarged Prostate. A. E. Mackay, Portland.
93 The Stomach as She Is. S. E. Bruce, Lewiston, Idaho.

Central States Medical Monitor, Indianapolis.

May.

94 Treatment of Cardiac Dilatation. C. R. Sowder, Indianapolis.
95 Human and Animal Tuberculosis. R. W. Tuck, Arkansas City, Kan.
96 Minor Surgery. M. A. Austin, Anderson, Ind.
97 Case of Double Uterus and Vagina. R. O. McAlexander, Indianapolis.
98 Heredity. J. W. Crismond, Anderson, Ind.

Colorado Medicine, Denver.

May.

99 Cases of Internal Derangements of Knee-joints. L. Freeman, Denver.
100 Bone Injuries. W. T. B. Baker, Pueblo.
101 Radical Cure of Varicocele and Its Results. F. G. Connell, Oshkosh, Wis.
102 Surgical Treatment of Cancer of Rectum in Women. W. R. Craig, Denver.
103 Rupture of Urinary Bladder. J. R. Espey, Trinidad.
104 Surgical Treatment of Digestive Disorders. J. R. Arnell, Denver.
105 Diagnosis of Operative Stomach Conditions. J. N. Hall, Denver.

Philippine Journal of Science, Manila.

May.

106 Modern Theories in Relation to Immunity. P. C. Freer.
107 Cultivation of a Bovine Piroplasma. M. Miyajima.
108 Etiology of Dengue Fever. P. M. Ashburn and C. F. Craig.

Alienist and Neurologist, St. Louis.

May.

109 Is Genius a Sport, a Neurosis, or a Child Potentiality Developed? (to be continued). J. G. Kiernan, Chicago.
110 The Tramp as a Social Morbidity. H. C. B. Alexander, Chicago.
111 Entoning of Neurones in Practice of Medicine and Surgery. C. H. Hughes, St. Louis.
112 A Psychologic Medicolegal Study. G. F. Adams, Kenosha, Wis.
113 Psychologic Study of Man's Moral Evolution. A. S. Ashmead, New York.
114 Case of Canine Hermaphrodism. R. W. Shufeldt, New York.
115 Is Sexual Perversion Insanity. H. N. Moyer, Chicago.
116 Erotism, Normal and Morbid, and the Unwritten Law in Our Courts. C. H. Hughes, St. Louis.
117 Thaw's Paranoiac Morbid Egoism. C. H. Hughes, St. Louis.

Virginia Medical Semi-Monthly, Richmond.

May 24.

118 Puerperal Infection. G. D. Lind, New Richmond.
119 Treatment of Peritonitis. W. L. Pepe, Richmond.
120 Acute Purulent Otitis Media. J. R. Perkins, Spencer, Va.
121 Prognosis in Chronic Valvular Lesions. M. Call, Richmond.

122 Means Used in Treatment of Tuberculosis. T. B. Keyes, Chicago.
123 Evolution of Man's Digestion. M. O. Burke, Richmond.
124 Principles of Surgery. S. McGuire, Richmond.

Indiana Medical Journal, Indianapolis.
June.

125 President's Address of Fifty-eighth Annual Session of the Indiana State Medical Association. G. J. Cook, Indianapolis.
126 Evolution of Medical Education. W. E. Stone, Purdue.
127 *Blastomycosis and Its Congeners. A. W. Brayton, Indianapolis.
128 Opsonins, Practical Application of Opsonins (Part 2). H. S. Thurston, Indianapolis.

127.—See abstract in THE JOURNAL, June 22, 1907, page 2145.

Denver Medical Times.
June.

129 Colloid Carcinoma of Mammary Gland. F. J. Dixon, Denver.
130 Diarrheal Diseases. H. G. Cattermole, Boulder.
131 Corrosion Anatomy. B. Robinson, Chicago.
132 Localized Infection Treated by Bier's Method. G. R. Pogue, Greely.
133 Rapidly Developing Scurvy on Condensed Milk and Eskay's Food. H. S. Shafer, Denver.
134 Atypical Case of Gall Stones. F. G. Buchanan, Denver.
135 Visiting Nurse Association. E. Lawney, Denver.
136 Nervous Irritation. D. A. Richardson, Denver.

Utah Medical Journal, Denver.
June.

137 *Use of Iodin in Surgical Work. J. E. Cannaday, Hansford, W. Va.
138 Bacteriology and Bacteriemia of Pneumonia. S. J. Townsend, Salt Lake City.

137.—This article also appeared in *American Medicine* for November, 1906.

Kentucky Medical Journal, Bowling Green.
June.

139 Ideal Relation Between the Doctor and the People. W. W. Richmond, Clinton.
140 Cerebral Congestion. J. T. Smith, Gamaliel.
141 Insanity. J. M. Ferguson, Hopkinsville.
142 Nelson County (Ky.) Medical Society in Relation to Hygiene. W. L. Helser, New Haven.
143 Plea for More Faithful Consideration of Natural History of Disease. J. B. Bullitt, Louisville.
144 Disjointed Observations on Our Technic. A. M. Cartledge, Louisville.
145 *Medical Treatment of Gall Stones. R. A. Bates, Louisville.
146 Concussion of Brain. T. H. Garvin, Horse Cave.
147 Case of Cardiac Asthma. W. M. Ewing, Smiths Grove, Ky.
148 Origin of Medical Science. W. Blair, Glensfork.
149 Miscarriage and Its Treatment. W. H. Strother, Hot Springs, Ky.

145.—See abstract in THE JOURNAL, Oct. 27, 1906, page 1402.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.
June 22.

1 *Tropical Ailments as They Are Met With in Britain. J. Cantlie.
2 *Referred Pain and Its Diagnostic Value. D. Forsyth.
3 *Treatment of Locomotor Ataxia by Fibrolysin. F. M. Pope.
4 Causes and Significance of Ambiguous Reactions Obtained in Testing Urine for Sugar. H. Maclean.
5 *Ligature of Common Carotid for Arterial Dilatation and Epilepsy. R. Parker.
6 Cultivation of Meningococcus in Epidemic of Cerebrospinal Meningitis in Belfast. W. St. C. Symmers and W. J. Wilson.
7 *Rôle of Various Elements in Development and Regeneration of Bone. W. Macewen.
8 Dystocia from Encephalocele. L. G. Davies.
9 Uterine Hemorrhage and Ovarian Disease. W. H. Maling.
10 Case of Rumination in Man. A. C. L. La Frenais.
11 *Infection of Measles Transmitted by Letter. H. R. Davies.
12 Hyperemesis. W. M. Crofton.

1. Tropical Ailments in Britain.—Cantlie claims that it is not at all uncommon for a tropical resident, while at home, to develop some latent illness, even in the most remote highland glen or in the wilds of Galway. The diseases discussed are malaria, hemoglobinuria, dysentery, sprue, tropical liver, hepatic abscess, plague, beriberi, Dhobbie itch, Malta fever and filiariasis.

2. Referred Pain.—Forsyth says that referred pain is, in a way, an error of judgment. The phenomenon is a subjective one, but not infrequently is so characteristic as to suggest the diagnosis, such as the shooting pains down the arm in angina pectoris, the pain in the back in liver colic, and the pain in the knee in hip disease.

3. Treatment of Locomotor Ataxia by Fibrolysin.—In one case reported by Pope the intramuscular injection of fibrolysin, 2.3 c.c., on alternate days, was followed by much improvement and by return of the knee jerks. The shooting pains had disappeared and the patient was able to walk well with the aid of two sticks. The pupil reaction remained unchanged. A second case, treated at the same time, showed little or no improvement.

5. Ligature of Common Carotid.—Parker reports a case of arterial dilatation of the left side of the head, attended by epilepsy and right hemiparesis, in which relief was obtained by ligature of the left common carotid artery. The patient, a female, was 32 years of age. The dilated vessels were first noticed on the left forehead when she was 17 years old. The fits began at the age of 22. Latterly there had been as many as 13 a week. There was no aura, but complete loss of consciousness. The left common carotid was tied with catgut. The patient was immediately relieved of her headache and all other inconvenience and was free from fits for a time. The fits returned about three months after the operation, but were mild and occurred but seldom. The patient's memory and power of speech were failing, but in other respects she was healthy and cheerful.

7. Regeneration of Bone.—From the abstracts of Macewen's paper it would appear that the osteogenic power of bone cells is far greater than that of the periosteum. A long bone deprived of its periosteum continued to grow in experiments made, and so also did the flat bones of the skull. Furthermore, bone may be made to grow in the midst of lacerated muscles by the mechanical distribution of osteoblasts. On the other hand, the removal of a shaft of bone from its enveloping periosteum was not followed by the regeneration of the bone in the periosteal cylinder.

11. Infection of Measles.—Davies reports a case of measles occurring at a considerable distance from any other case. It appears that a young man was taken ill with a very light attack of measles, and while in bed wrote a letter to his brother. Shortly after the receipt of the letter the brother was attacked by measles, having been in contact with no one previously who had had the disease.

The Lancet, London.
June 22.

13 *Nature and Treatment of Hemorrhoids. A. E. J. Barker.
14 *Treatment of Hysteria. T. D. Savill.
15 *Two Cases of Excision of Ruptured Spleen. E. W. Roughton and T. P. Legg.
16 *Symptoms Which May Be Produced by Seventh Cervical Rib. C. M. H. Howell.
17 Case of Acute Leukemia. H. H. E. Scatliff and E. Hobhouse.
18 *A Dangerous Dry Shampoo. H. C. Colman.

13. Treatment of Hemorrhoids.—When hemorrhoids are present in abundance, and covered by irritating mucous discharge, Barker applies a lotion of bichlorid of mercury 1 to 1,000, twice a day. He says it is surprising what improvement will take place, even in very bad cases, under this treatment. If this treatment fails, and there is only a single hemorrhoid, Barker advises its submucous excision, replacing the mucous membrane over the denuded area. When there are many hemorrhoids or when there is not enough mucous membrane to cover all the stumps, and there is some risk of contraction of the anus, Barker does the Whitehead operation, and his results have always been good.

14. Treatment of Hysteria.—Savill discusses this subject under five headings: 1, Certain general measures directed to improve the tone and nutrition of the nervous system and to allay its irritability; 2, other symptomatic treatment, mainly by the aid of drugs; 3, etiologic treatment which depends on the discovery and eradication of the determining cause of the hysterical manifestation in operation; 4, the use of vasoconstrictors, vasodilators and blood remedies, and 5, educational and other preventive measures.

15. Excision of Ruptured Spleen.—Roughton and Legg each report one case of traumatic rupture of the spleen, in which splenectomy was done successfully. One patient was alive and well 18 months after the operation, and the other was in perfect health when seen last, more than three years after

the operation. Both patients were girls, aged respectively 7 and 12 years. The blood findings in each case are detailed at length.

16. **Cervical Ribs.**—Howell reports 16 cases of cervical ribs, of which he makes a complete analysis on the basis of clinical history.

18. **Dangerous Dry Shampoo.**—Colman reports a case of chloroform poisoning following the use of tetrachlorid of carbon as a dry shampoo. The symptoms were typical of chloroform poisoning, and the patient did not recover her usual health for several days.

British Journal of Children's Diseases, London.
May.

19 *Tuberculosis of Testis in Children. R. J. Howard.
20 Rearing of Children. G. Carpenter.

19. **Tuberculosis of Testis in Children.**—Howard records 9 cases of tubercular epididymo-orchitis occurring in children under 12 years of age, which were admitted to the London Hospital during a period of 10 years. During this time 149 cases occurred in patients over 12 years of age. The total number of male patients admitted during the 10 years was 55,912. In three of the 9 cases both testes were affected, the right gland twice and the left four times. In only two of the cases was there any marked history of tuberculosis in the family. The oldest patient was 10 years and the youngest 6½ weeks old. Howard says that if general hygienic and opsonic treatment do not rapidly improve a tubercular testis in a child the organ should be removed. If both testes are attacked, or if one has already been removed, orchidectomy should only be done as a last resort.

Glasgow Medical Journal.
June.

21 Scottish Medicine Before the Union. E. H. L. Oliphant.
22 *Perforation of Jejunal Ulcer Seven Years After Gastrojejunostomy. G. H. Edington.
23 Fluid of Milky Appearance Removed from Tunica Vaginalis. H. E. Jones.

22. **Perforation of Jejunal Ulcer.**—Edington reports a case of pyloric stenosis in which an anterior gastrojejunostomy was done near the pyloric end of the stomach. Nearly five years later a cholecystotomy was done and a stone was extracted from the cystic duct. Two years after this operation the man was awakened by an intense epigastric pain. A laparotomy was insisted on, and on the anterior surface of the jejunum, close to the gastrojejunal anastomosis, there was found a perforation. This was closed by Lembert sutures, but the patient never rallied, and died three and a half hours later. The ulcer was to the distal side of the artificial stoma, in a part of the gut, which would probably not be bathed by the bile and pancreatic juice before the stomach contents came in contact with it.

Annales d. Mal. d. Org. Gén.-Urin., Paris.
Last indexed, XLVIII, page vi.

24 (XXIV, Nos. 21-24, pp. 1601-1920.) *Restoration of Perineal Urethra After Severe Traumatism of the Perineum, in Case of Traumatic Strictures, and in Certain Gonorrheal Strictures. (Réfection de l'urèthre périnéal.) O. Pasteau and A. Iselin.
25 Means to Transform the Urban Electric Current for Use in Bladder or Urethra. (Inconvénients du transformateur du courant électrique, etc.) R. Bonnean.
26 Wolffian Cysts of Spermatic Cord. (Kystes wolffiens du cordon.) Vautrin and Apfel.
27 *Radiotherapy of Enlarged Prostate (Traitement radiothér. de l'hypertrophie de la prostate.) A. Tansard and G. Fleig.

24. **Restoration of Perineal Urethra.**—This profusely illustrated monograph is based on both experimental work and clinical experience. The total list of cases of rupture of the urethra and attempted restoration embraces 127 cases, many of which have never previously been published. The article won the Argenteuil prize of the *Académie de Médecine*. The technic advocated seems to accomplish the purpose while avoiding danger of striotures later.

27. **Radiotherapy of Enlargement of the Prostate.**—Tansard and Fleig give the details of a case in which Roentgen exposures induced atrophy of the enlarged prostate, reducing its size until it ceased to interfere with the passage of urine. They regard radiotherapy as indicated particularly in cases that have not yet reached the stage of retention, also for young patients, and for those with retention whose business requires prompt measures, also in case the bladder is infected, the kidneys diseased or the patient advanced in years. In the case described 13 exposures were made in the course of eight months, using from 2 to 5 H. units, exposing the perineum and focusing the rays on a surface 5 cm. in diameter. In a second case four exposures in a month gave great relief. Both patients had had gonorrhea in youth.

Presse Médicale, Paris.

28 (XV, No. 30, pp. 242-248.) Chronic Nephritis as Cause of Arteriosclerosis (Néphrite chron. cause d' art.-sclér.) O. Josué.
29 Indications for the Actual Cautery. (Cautérisation ignée.) P. Desfosses and A. Martinet.
30 (No. 31, pp. 249-256.) *Experimental Study of Cancer Poisons. (Poisons cancéreux.) Girard-Mangin and H. Roger.
31 Circulation of Blood in Liver. (Circ. sanguine dans le foie.) E. Géraudel.

30. **Experimental Study of Cancer Toxins.**—Roger and Girard-Mangin report experiments which seem to indicate that the toxic character of certain substances in cancers is intimately connected with their structure. Soft cancers are more toxic than hard, and the toxicity diminishes as the fibrous tissue crowds out the true cancer cells. Each form of cancer seems to have its specific toxic properties, the effects varying with the nature of the neoplasm when animals are injected with the cancer extract.

Archiv f. Kinderheilkunde, Stuttgart.
Last indexed, XLVIII, page 250.

32 (XLVI, Nos. 1-2, pp. 1-100.) *Causes of Backwardness in School Children. (Vorgeschichten und Befunde bei schwachbegabten Schulkindern.) E. Schlesinger.
33 *Milk Powder as Food for Infants During Hot Weather. (Getrocknete Milch, etc.) A. Hüssy.
34 Breast Feeding at Budapest. (Verbreitung der natürlichen Säuglingsernährung in Budapest.) H. Fleschand A. Schoenberger.
35 Two Cases of Progressive, Familial Dystrophy of the Muscles. (Dystrophia musc. progressiva familiaris.) J. Winocouroff.
36 Cerebellar Tumors in Children. (Kleinhirngeschwülste.) Id.
37 *Forms of Meningitis and Lumbar Puncture. (Meningitisarten und Lumbalpunction nach Quincke.) E. J. Gindes.

32. **Causes of Backwardness in School Children.**—Schlesinger has made a special study of 138 children in the special school at Strasburg for children who are unable to keep up with the lowest classes in the grammar schools. He finds by study of the individual cases that the defective condition is, as a rule, the result of injurious influences acting on a central nervous system already suffering from an inherited weakness. The most serious conditions are observed in children in whom several of these injurious influences had cooperated, even when the hereditary taint was slight. His statistics show that these backward children form 1.1 per cent. of the total number of school children, and that boys are in the majority. In 13 cases there had been severe injuries of the head; in 28, convulsions in infancy, epilepsy, chorea or infantile paralysis, and in 20, severe headaches. Drunkenness in the parents was noted in only 30 cases; long sickness during infancy in 52, and exclusively artificial feeding in 55, measles in 76, whooping-cough in 40, diphtheria in 22, and scarlet fever in 10. He urges that these backward children should be given more opportunities for bathing, free meals, country schools, etc. They should have the benefit of everything of the kind, and the medical inspector of a school for backward children should be empowered to watch over the children and to treat them as occasion arises, if he finds that the parents do not follow his recommendations in regard to medical advice. As these children are generally of the class in which the parents are unable to pay for a physician's care for their children, no one will lose pecuniarily by such a course, while the children would benefit immeasurably by constant medical oversight and treatment as indicated.

33. **Milk Powder for Infant Feeding.**—Hüssy's experiences were not altogether favorable. In a few cases sick children seemed to suffer from the use of the desiccated milk powder possibly because it contained too much fat. Its use is to be recommended, however, he says, in certain circumstances for want of anything better, as, for instance, when it is impossible to obtain pure milk, especially while traveling. It might be possible to produce a desiccated milk powder containing less fat which would answer the purpose still better than that on the market.

37. **Various Forms of Meningitis and Lumbar Puncture.**—Gindes insists on the diagnostic importance of lumbar puncture, as the various forms of meningitis induce practically the same clinical picture. Lumbar puncture alone, he asserts, gives the clue to the correct diagnosis. The cerebrospinal fluid should be examined for pressure, aspect, proportion of albumin, and the morphologic elements of the sediment, with chemical, bacteriologic and cryoscopic tests. None of these diagnostic elements is conclusive alone, except the finding of tubercle bacilli, but their combination affords insight into the disease process. He advises lumbar puncture in every case of meningitis for these reasons, but chiefly for its curative action and the possibility of therapeutic injections into the spinal canal. The vomiting is generally arrested, the patient feels better, while the temperature drops and the stiffness of the neck subsides—these changes are observed so frequently that they can not be explained by a mere coincidence. He always supplements the puncture with hot baths and inunctions with a silver preparation. He has applied lumbar puncture in 30 cases of meningitis, avoiding aspiration of the fluid, and has never observed serious by-effects. Some of the case histories are given in detail.

Beiträge zur klinischen Chirurgie, Tübingen.
Last indexed XLVIII, page 372.

38 (LI, No. 1, pp. 1-246.) *Carbolic Acid in Operative Treatment of Infections. (Verwendung koncentrierter Carbol-Säure bei op. Beh. von Inf.) K. Lennander.
39 Syndromes simulating Appendicitis Without Appreciable Pathologic Findings in Abdominal Organs. (Epityphlitis ähnliche Krankheitsbilder, etc.)
40 Defects in Ribs and Other Malformations in Case of High Scapula. (Ueber Rippendefekte und anderweitige Missbildungen bei cong. Hochstand des Schulterblattes.) A. Lieberknecht.
41 *Chronic Adhesive Pericarditis and Treatment by Cardiolysis. (Chron. adhesive Med.-Peric. und Cardiolyse.) W. Danielsen.
42 Torsion of Seminal Cord. (Tors. des Samenstranges.) W. Dreibholz.
43 *Several Years of Feeding Through a Stomach Fistula and Lessons Learned Thereby. (Mehrjährige Magenfistelernährung.) von Hacker.
44 Absence of Functional Disturbances After Resection of Peripheral Nerves. (Resektion von periph. Nerven.) E. Goldmann.
45 Tardy Form of Inherited Syphilis Affecting the Joints. (Hist. und Radiol. zur hered. Gelenklues.) B. Bosse.
46 (No. 2. Pp. 247-501.) *Operation for Perforated Gastric Ulcer. (Perf. Magengeschwüre.) E. Noetzel.
47 *Pathology and Treatment of Benign Stenosis of the Pylorus. (Benigne Pyl-Sten.) R. Kramer.
48 Traumatic Necrosis of Spleen with Perisplenitic Abscess. (Traum. Milz-Nekrose.) K. Oml.
49 Tumors of Salivary Glands. (Speicheldrüsentumoren.) R. Ehrich.

38. **Carbolic Acid in Addition to Operative Treatment of Infections.**—Lennander advocates the use of concentrated carbolic acid in treatment of infectious processes, and especially as an adjuvant to operative measures. He applies 95 per cent. pure carbolic acid for a quarter or half a minute up to two or two and a half minutes, according to the tissues, and for from five to ten minutes in cavities in the bones. It is then carefully washed out with alcohol. The anesthetic action of the carbolic acid is an important factor in the cure. As it destroys and obliterates the tissues with which it comes in contact, including the lymph and blood vessels, it is not absorbed, and hence causes no poisoning like the weak solutions. He describes his successful experience with it in a number of cases of buboes and soft chancres, leg ulcers, gangrenous ulcers, appendicitis, fistulas in bones, osteitis, staphylococcus osteitis, osteomyelitis, streptococcus infection with a compound fracture of the leg, tuberculous joint affections, actinomycosis and accessible cancers. In case of a malignant neoplasm which he is unable to resect into absolutely sound tissue, he does not cover the surrounding part with skin, but leaves it exposed and applies Roentgen treatment as soon as the patient's condition allows, as also in cases in which the skin is sutured.

41. **Cardiolysis in Treatment of Chronic Adhesive Mediastino-Pericarditis.**—Danielsen reports another case which brings to nine the number operated on by Brauer's technic of making an opening over the heart in the wall of the thorax. In the case described a flap of skin and muscle was turned back to the axillary line, the tip reaching to the margin of the sternum. The fourth, fifth and sixth ribs were resected under the periosteum to the axillary line, including the costal cartilages, and the periosteum was carefully removed. Nine months later the heart action was found immensely improved so that the man—a butcher—can attend to his business. The pulse is full and regular, the ascites has completely disappeared and the patient feels perfectly well, although certain symptoms still persist. Danielsen discusses the symptoms due to the mediastinal factor, that is, the symptoms resulting from the external pericarditis, and those resulting from the myocardial factor. He dwells further on the importance of the anamnesis and the objective traces of former affections. The clinical picture of adhesive mediastino-pericarditis differs, of course, as these factors are combined. He believes in cardiolysis in cases of trouble accompanied by systolic retraction of a broad expanse of the thorax as removal of part of the wall will certainly give relief. To determine whether or not the heart will be benefited by the operation it may be wise to test it by bed rest with tonics and diuretics to see if it is still capable of functioning well when some of the obstacles to its functioning are removed. The results of the operation to date have been most excellent. Various methods of anesthesia have been used, but a combination of morphin and a few whiffs of ether gave especially favorable results in the case reported.

43. **Gastric Fistula.**—In the case described by von Hacker, a woman in the thirties accidentally drank some lye with subsequent cicatricial stenosis of the esophagus, requiring gastrostomy. Dilatation of the esophagus with sound was commenced and continued by her family physician with, finally, perforation of the wall with the tip of the sound 3 cm. below the jugular vein. A phlegmon developed in the neck, which was cured by incision and mediastinotomy, but entailed complete cicatricial stenosis of the esophagus. Since then, for nearly five years and a half, the patient has been feeding herself exclusively through the fistula into the stomach and has been well nourished. The fistula has been perfectly continent, not giving rise to any tendency to eczema in the vicinity, although the patient wears constantly a large drain tube. The food, well chewed and mixed with saliva, is introduced into the stomach through a tube and funnel, its passage through the tube sometimes aided by pouring in fluids or "milking" it along. The fistula was made by the Hacker-Lucke technic. He has been equally successful with two other patients; the fistula healed readily after the esophagus had been duly dilated with sounds. He discusses the technic, indications, etc.

46. **Operative Treatment of Perforated Gastric Ulcer.**—Noetzel discusses 16 cases of perforated gastric ulcer observed at Rehn's surgical service at Frankfurt since 1898. Nine of the patients recovered. In four of the favorable cases the operation was undertaken during the first ten hours; in two the interval had been only three hours and there was no sign of peritonitis, but one of these patients never recovered from the collapse incident on the perforation. Three patients with severe peritonitis were not operated on until the fortieth or fifty-third hour and yet all recovered. The ulcer was in the anterior wall in every case. Appendicitis was diagnosed in three cases. The symptoms at first are those of any acute irritation of the peritoneum, and later, of diffuse peritonitis. The intense pain in the stomach region and the rigid abdomen may accompany other processes. They were observed recently in two cases of ileus from torsion. It may be accepted as a rule, he says, that any distinct symptoms proceeding from the peritoneum may be regarded as indicating a process which requires operative intervention. Acting on this rule in all acute cases may sometimes impel the surgeon to do an apparently urgent operation when, in fact, there is no need for such haste, but he need scarcely fear that he is ever doing an unnecessary operation. The technic is reviewed, and in conclusion he asserts that operative treatment of gastric ulcer should be instituted earlier than has been the custom hitherto, not waiting for years of disturbances before deciding on surgical interference. His experience has convinced him that ulcers which do not heal rapidly never heal permanently. The longer the patient is both-

ered by the ulcer the greater the chances of perforation and of transformation into a cancer, and the more extensive the ulcerative destructive processes, rendering the results of operative treatment more precarious, not to mention the danger of multiple ulcer formation, of impaired stomach functioning and of subjective nervous disturbances after the operation. He urges an exploratory laparotomy in all chronic stomach troubles, especially those accompanied by pain, as they are almost certain to be the work of an ulcer. Gastric catarrh persisting for six months or more in persons not addicted to liquor is due to ulcer in all cases without exception, he thinks.

47. **Benign Stenosis of the Pylorus.**—Kramer reviews 139 cases in which Czerny operated before 1905. A large number of the patients have been examined anew recently and the findings are analyzed from various points of view. He found that the after-treatment of the patient has a decisive influence on the final outcome of gastroenterostomy for innocent stenosis, especially for stenosis resulting from an ulcer. The patient must refrain from any food liable to lead to retention in the stomach. If the patient can not be kept under intermittent control, it is best to forbid permanently certain dishes, such as coarse, not finely mashed vegetables, especially salads. By observing these not very onerous restrictions the prospects of avoidance of retention of food in the stomach, with its train of evil consequences, will be much improved and the patient's condition remain permanently good.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

50 (XXXIII, No. 20, pp. 785-832.) *Coronary Arteries and Myocardium. (Coronararterien und Herzmuskel.) C. Hirsch and W. Spaltehols.
51 Complement Deviaton Test Probably Not Adapted for Test of Rabies and Vaccine. (Komplement-Bindung, etc.) O. Heller and E. Tomarkin.
52 *Tracheal Diphtheria with Multiple New Formation of False Membranes. Recovery. (Trachealdiphtheria, etc.) H. Herzog.
53 *Iodoform-Oil Emulsion in Leprosy. (Heilung der Lepra.) Diesing.
54 Pyocyaneus Sepsis in Adult. (Pyocyaneussepsis.) Hübener.
55 *Case of Primary Lung Cancer. (Lungenkrebs.) G. Morelli.
56 Alcoholism in the Orient. (Alk. im Orient.) B. Laquer.

50. **Coronary Arteries and Myocardium.**—Hirsch and Spaltehols state that if the findings in dogs and monkeys can be assumed to represent conditions in man, the coronaries are not terminal arteries, but have exceptional facilities for anastomosis. The article is illustrated.

52. **Tracheal Diphtheria with Repeated Formation of False Membranes.**—Herzog's patient, a child about 3 years old, coughed up the tube half an hour after its first introduction, bringing with it the membrane drawn over the tube like a cot, more than six and a half inches long. The child was relieved at once, but required intubation again ten hours later, and again the tube was coughed out in half an hour, bringing a membrane cot with it nearly six inches long. The procedure had to be repeated again fourteen hours later, when the tube was coughed up almost immediately, bringing a third membrane tube nearly six inches long, after which the child rapidly recovered. The antitoxin treatment evidently loosened the membrane, and it was also probably responsible for the rapid recovery after the severe diphtheria.

53. **Iodoform-Oil Treatment of Leprosy.**—Diesing describes the technic for his method of subcutaneous injection of a mixture of one part iodoform to three parts of olive oil. In his experience all mild, uncomplicated cases and a large percentage of the severe were cured by this treatment. He makes the injections at different parts of the body each time, injecting 0.005 c.c. at first, gradually increasing to 2 c.c., and repeating this standard dose daily for fifteen or twenty days, suspending it for a few days if symptoms of intoxication appear, such as loss of appetite, weakness and pallor, or if the organism is saturated with iodoform, which is noticeable in the odor. In most cases a month's treatment, he asserts, completes the cure. The treatment is not adapted for patients with brain troubles, as the iodoform is liable to induce maniacal attacks in them. It is also contraindicated in leukemic conditions and in case of weak heart action, in which iodoform aggravates the condition.

55. **Primary Cancer of the Lung.**—Morelli's patient, a woman of 28, presented merely the symptoms of a subacute pleuropneumonia, accompanied by considerable emaciation and weakness. The first symptoms were a chill, with fever and cough. In three months the sputum showed traces of blood, and the patient died in seven months from heart failure. Autopsy confirmed the diagnosis of pleuropneumonia, but it revealed likewise cancerous masses distributed through the lymph spaces of the adventitia of both lungs. The youth of the patient, the absence of metastases, the infiltrating character of the disease, the acute course and the absence of any physical signs of the cancer, as the areas of dulness almost entirely cleared up in time, were the special features of the case.

Deutsche Zeitschrift f. Chirurgie, Leipsic.

Last indexed, page 93.

57 (LXXXIV, Nos. 4-6, pp. 277-588.) Tribute to E. Rose on His Seventieth Birthday. (Alte Erinnerungen.) R. U. Krönlein.
58 *Surgery of the Kidneys. (Nierenchirurgie.) H. Doering.
59 Detachment of Parts of Joints and Allied Processes. (Ablösung von Gelenkteilen.) K. Budinger.
60 *Increased Growth of Long Bones in the Young in Incipient Tuberculous Joint Inflammations. (Gesteigertes Längenwachstum der Röhrenknochen.) T. Wartmann.
61 *Ultimate Results of Operative Treatment of Mammary Carcinoma During Last Twenty-five Years. (Mammacarc. und op. Endresultate.) H. Wunderli.
62 Pathologic Anatomy of Appendicitis. (Appendicitis.) E. Franke.
63 Amyloid Tumors of Tongue. (Am.-Tum. der Zunge.) H. Gross.
64 Isolated Primary Tuberculosis of Lobule of Ear. (Tub. des Ohrläppchens.) Paetzold.
65 *Kinking of the Intestine. (Knotenbildung des Darms.) R. Faltin.
66 Intestinal Lipoma. (Intestinallipom.) N. Hellstrom.
67 *Experiences with 64 Cases of Peritoneal Tuberculosis. (Tub. Peritonitis.) Gelpke.
68 Fibroadenoma of the Breast Weighing One-tenth of the Body Weight, and Innocent Tumors of the Female Breast in General. (Benigne Tumoren der weibl. Brustdrüse.) J. Finsterer.
69 Cure by Splenectomy in Advanced Stage of Primary Splenomegaly with Anemia, Ascites, Icterus and Hemorrhage from Nose and Gums. (Op. Behandlung der Bantischen Krankheit.) A. Thiel.

58. **Treatment of Wandering Kidney.**—Doering concludes from experiences with 70 cases of wandering kidney treated in the clinic at Göttingen, that satisfactory results can be expected after fixation of the kidney when there are no severe nervous-hysteric complications. In case of the latter the operation may fail to benefit the patient, irrespective of the stage of the trouble. About 72 per cent. of the patients in the first group were cured and nearly 19 per cent. improved. He does not approve of fastening the kidney to the twelfth rib with silver wire, as the pleura is liable to be injured in so doing. Partial decortication and fastening the edges of the slit capsule to the side abdominal wall are the measures adopted, supplemented by a suture passing entirely through the kidney parenchyma, capsule and abdominal wall. No functional disturbance, he says, need be feared from this technic.

60. **Increased Growth in the Long Bones with Incipient Tuberculous Joint Affections.**—Wartmann cites specific examples to demonstrate the frequency of increased growth of the long bones in commencing disease of a joint above or below. It is important to bear this in mind and to have the heel and sole for the foot on the sound side raised to correspond to the increased length of the long bone on the affected side. Otherwise severe deformity may result.

61. **Mammary Cancer.**—Wunderli's statistics embrace 221 cases of mammary cancer, observed from 1881 to 1905, coming from a total population of about 150,000, the total number in the region being about 360 during this period. The number of cases of gastric cancer was 4,379. Only 60 of the women with mammary cancer had not borne children, the average being 4.9 to each woman, and 12 had had a suppurative mastitis at some time. In 20 per cent. of the total number hereditary antecedents were evident. The 26 cases of definite cure are described in detail. The greatest danger seems to be the development of cutaneous recurrences. They are almost invariably observed in the neighborhood of the breast, and he thinks this tendency might be avoided by extensive resection of the skin in the vicinity.

65. **Kinking of the Intestines.**—Faltin has had occasion to observe six cases in which the intestines seemed to tie up

in a knot. The patients were all men and were awakened suddenly in the night with the severe symptoms. All succumbed except one patient saved by early resection of the gangrenous twisted intestine. In order to loosen the knot, puncture of one or more of the distended loops may be necessary. He knows of only two other cases on record in which the patients survived. In Turner's case the intestine was found sound, and resection was not needed after reduction of the knot.

67. **Peritoneal Tuberculosis and Its Lesions.**—Gelpke gives a historical, anatomic, pathologic and clinical sketch of peritoneal tuberculosis and relates his experiences with sixty-four cases and much experimental research. He is convinced that the effusion in tuberculous peritonitis is not a harmful product, but is rather a means of defense on the part of the organism against the invasion of the tubercle bacilli. It is irrational to hasten to remove it and thus deprive the organism of its aid. After the effusion has lasted for weeks and has probably done all it is capable of doing, it may be aspirated to give place to the formation of new and more powerful effusion. In many cases the effusion vanishes itself without assistance from without. He advises against draining after laparotomy in peritoneal tuberculosis, as it is liable to induce the formation of a fistula, and it drains away juices useful for the organism. The abdominal cavity should not be rinsed with salt solution, and it is superfluous to dust it with iodoform. The physician should refrain, he states, from manipulation of the abdomen, curetting, releasing of adhesions and the like, as they are liable to lead to development of a fecal fistula. The tubes should not be removed unless readily accessible and much diseased. Tuberculous peritonitis without effusion should be treated with expectant measures only, as the general consensus of opinion seems to be that surgical intervention is of dubious value in this form, while it is apt to entail a fecal fistula. In the previous studies of tuberculous peritonitis too little attention has been paid to the analogous processes in the pleura and the other serous cavities, and the "water" has been regarded too exclusively as the principal morbid element. Gelpke's experience has shown the frequent coincidence of fixation of the uterus in retroflexion with the relics of a tuberculous process in the peritoneum. He comments further on the rapid and radical way in which the organism is able to conquer severe tuberculous lesions of the peritoneum in some cases, not only curing the peritonitis, but an action at a distance being also apparent. Weisswange has witnessed the simultaneous cure of tuberculous processes in the kidneys and lungs, Israel and König of processes in the intestines, Nassauer in the tubes, and Gelpke in the tubes and lungs. These facts seem to indicate, he says, that the serous membranes are capable of producing a curative serum, and that the curative agents there evolved have likewise a favorable action on the primary affection elsewhere, so that the patient after the cure of his peritoneal tuberculosis is better off than before with his latent focus or foci in the intestines, tubes or lungs.

Münchener medizinische Wochenschrift.

70 (LIV, No. 18, pp. 865-920.) *Action of Hot or Cold Water Bandages in Inflammation. (Wirkung des Priessnitzschen Umschlags). H. Schade.
71 *Blood Pressure and Hypertrophy of Heart in Sclerosis of the Aorta. (Blutdruck und Herzhypertrophie bei Aortensklerosen.) A. Bittorf.
72 *Agglutinins in Typhoid Urine. (Ausscheidung von Agglutininen.) H. v. Hoesslin.
73 *Mutual Relations Between Diazo Reaction, Bacteriemia and Agglutination in Typhoid. (Unterleibstyphus.) A. T. Genken.
74 *Examination of Heart with Pelvis Raised. (Untersuchung des Herzens in Beckenhochlagerung.) A. Stern.
75 *Nature and Origin of B. Fischer's "Scarlet Oil" Proliferation of Epithelium. (Epithelwucherungen.) L. Jores.
76 Simplification of von Bylicki's Pelvic Gauge. (Beckenmessung.) O. Hoehne.
77 A New Method of Administering Phosphorus to Children. (Phosphorernährung, etc., im Kindesalter.) S. Posternak.

70. **Action of Hot and Cold Water Bandages in Inflammation.**—Schade refers to the fact that the osmotic pressure of the fluid in which they are laved has a great influence on the size of the cells. When the osmotic pressure is high the cells of the region swell and pain results; the cells are injured and inflammation follows. The application of hot or cold water bandages to induce "reactive hyperemia," among other things affects the conditions of the osmotic pressure, increasing the centrifugal movement of the lymph and with it sweeping the products of inflammation toward the periphery, where they are liable to be taken up by the blood or otherwise rendered innocuous. Superficial edema with deep-seated inflammation should be regarded as an indication for inducing this reactive hyperemia, and this indication can be met by applying a Priessnitz bandage. It is also indicated when the edema is still latent, as the effect is far reaching.

71. **Blood Pressure and Hypertrophy of Heart with Sclerosis of Aorta.**—Bittorf relates the details of 27 cases of aortic sclerosis in which the blood pressure was high and the heart more or less hypertrophied. He thinks that these findings occur more constantly than is generally recognized. He ascribes the increased blood pressure to changes in the nerves in the walls of the vessels, for which he presents evidence. He omits from consideration all cases with signs of nephritis.

72. **Elimination of Agglutinins in Urine in Typhoid.**—The conclusions of von Hoesslin's research are that healthy kidneys do not allow the passage of agglutinins, but when albuminuria exists, agglutinins appear also in the urine and in about the same proportion as the albumin.

73. **Mutual Relations Between Diazo Reaction, Bacteriemia and Agglutination in Typhoid.**—Genken calls attention to the remarkable parallelism between the diazo reaction and bacteriemia in cases of typhoid fever not under the influence of medication. The diazo reaction was never observed in his experience unless viable typhoid bacilli were circulating in the blood. As the bacteria disappeared from the blood the diazo reaction subsided, although other symptoms persisted. As the bacteria vanished from the blood, agglutination became positive. When the patients had been given salol, calomel or tannalbin this parallelism with the diazo reaction was not observed. The bacteriemia persisted, but the reaction was constantly negative. He believes that the above facts throw some light on the etiology of the diazo reaction, as it is observed likewise with spotted fever, measles and miliary tuberculosis.

74. **Examination of the Heart with the Pelvis Raised.**—Stern discusses the findings when the pelvis is raised and the heart then systematically examined. This technic is a good control of other methods, while percussion of the relative dulness of the right heart gives more reliable findings, the diastolic murmur of mitral stenosis becomes more distinct, and the characteristics of the systoles become more prominent.

75.—See editorial in THE JOURNAL, Nov. 10, 1906, page 1568.

Zeitschrift f. Geb. und Gynäkologie, Stuttgart.
Last indexed, XLVIII, page 891.

78 (LX, No. 1, pp. 1-159.) *Effectiveness of Modern Measures in Aseptic Gynecologic Laparotomies. (Kritik der modernen Massnahmen.) W. Hannes.
79 *Study of Endometritis. (Lehre von der Endometritis.) F. Hitschmann and L. Adler.
80 Mechanism of Torsion of Pedicle of Ovarian Tumors. (Stieltorsion von Ovarientumoren.) R. Jolly.
81 Intraligamental Chorioepithelioma Following Tubal Pregnancy and Intrauterine Abortion. (Intralig. entwickeltes Chorioepitheliom.) A. Garbisch.
82 *Hydatidiform Mole. (Zur destruirenden Blasenmole.) H. Kauffmann.
83 Inversion of Uterus After Abortion. (Inversio uteri post abortum.) F. Prüsmann.

78. **Bacteriologic and Clinical Study of Modern Aseptic Methods of Gynecologic Laparotomies.**—Hannes' communication issues from Küstner's gynecologic clinic at Breslau. The conclusions of the extensive research described are to the effect that dry, sterile rubber gloves, drawn over the disinfected and dried hand, are an effectual barrier to invasion of the wound by germs from the hand. Infection from the abdominal wall can also be entirely prevented, at least in comparatively short operations, by painting the field of operation with fluid rubber. This is more reliable than the use of rubber tissue. Now and then infection from the air in the operating room may occur. Wounds known to contain bacteria may heal as perfectly as if absolutely aseptic. There is still room for further improvement in technic, possibly by using some mild disinfectant instead of depending so much on physiologic salt

solution for rinsing the gloves, and by taking the boiled instruments out of an antiseptic fluid to protect against germs dropping on them out of the air, and he says that the aseptic apparatus should be given a bacteriologic test now and then for control. Hannes concludes that it is impossible to affirm with certainty that we are operating under strictly aseptic conditions, even with the most scrupulous attention to every detail to ensure asepsis.

79. **Endometritis.**—This article by two assistants at Schauta's clinic relates the results of extensive research which has demonstrated that the conditions described in the literature as "hypertrophic" and "hyperplastic glandular endometritis" are in reality merely the normal physiologic condition of the uterus lining just before menstruation. There is only one form of endometritis, they state, namely, interstitial inflammation. The inflammatory process develops in the mucosa of the uterus just as it develops in mucosa elsewhere. Previous observers have mistaken the physiologic changes of menstruation for inflammatory processes. The diagnosis of endometritis should be based exclusively on the finding of ordinary infiltration cells, the plasma cells, well characterized by their shape and staining properties.

82. **Hydatidiform Mole.**—Kauffmann reports the case of an xi-para of 38, with flat pelvis, whose unusually large children always had to be artificially delivered, generally with manual detachment of the placenta. Menstruation had always been profuse. After several weeks of a hemorrhagic discharge the uterus was found enlarged to the size of a five-months' pregnancy, but nothing suggesting a fetus could be palpated. The os was dilated with tents and the diagnosis of hydatidiform mole was confirmed by protrusion of vesicles. Under chloroform the large mole was easily detached and removed. It had not penetrated into the wall of the uterus at any point. No attempt was made to curette the uterus; it was merely rinsed out and tamponed, and ergot was given. After two days of pyrexia and a chill in the evening, the temperature dropped permanently to normal and the patient was soon discharged. Six weeks later the uterus was curetted; nothing was found in the scrapings except scraps of mucosa, clots and a few free villi in one scrap. A soft, elastic tumor gradually developed in the upper part of the right broad ligament, suggesting a chorioepithelioma, as menstruation continued unmodified and the uterus did not enlarge. It proved, however, to be a hydatidiform mole which had developed in the broad ligament, with a pedicle connecting it with a polyp in the uterus, from which it was separated by the whole width of the mass of muscle. A few villi had evidently been left in the uterus at the first operation, and from these a second mole had developed, but not in or near the uterus, starting evidently in the broad ligament. This new mole remained confined to the veins, not displaying any malignant characteristics. Some of the findings in this case suggest that the syncytium proceeds from the Langhans cells, and may be regarded as a degenerative form of the latter. Removal of the uterus at first would not have prevented the development of a chorioepithelioma later, as such growths are not necessarily restricted to this organ. On the other hand, hysterectomy would have exposed the very weak patient to a new danger. She seems to be entirely cured to date, with no signs of further trouble since the laparotomy in November, 1906, four months after the first operation.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

MATERIA MEDICA, THERAPEUTICS, PHARMACOLOGY AND PHARMACOGNOSY, Including Medical Pharmacy, Prescription Writing and Medical Latin. A Manual for Students and Practitioners. By William Schleif, Ph.G., M.D., Demonstrator of Medical Pharmacy in the Medical Department of the University of Pennsylvania. Series Edited by Bern B. Gallaudet, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, New York. Third Edition, Revised and Enlarged. Cloth. Pp. 470. Price, $2.50 net. Philadelphia: Lea Bros. & Co., 1907.

TEXT-BOOK OF PRACTICAL THERAPEUTICS. With Especial Reference to the Application of Remedial Measures to Disease and Their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B.Sc., Professor of Therapeutics and Materia Medica in the Jefferson Medical College, Philadelphia. Twelfth Edition, Revised and Rewritten. Illustrated. Cloth. Pp. 930. Price, $4.00. Philadelphia and New York: Lea Bros. & Co., 1907.

THE HOME MEDICAL LIBRARY. By Kenelm Winslow, B.A.S., M.D., Formerly Assistant Professor Comparative Therapeutics, Harvard University. With the Cooperation of Many Medical Advising Editors and Special Contributors. First Aid, Family Medicines, Etc. In Six Volumes. Cloth. Pp. about 270 each. Price, $7.50. New York: The Review of Reviews Co., 1907.

HYGIENIC LABORATORY BULLETIN No. 35. Report on the Origin and Prevalence of Typhoid Fever in the District of Columbia. By M. J. Rosenau, L. L. Lumsden and J. H. Kastle (Including Articles Contributed by Ch. W. Stiles, J. Goldberger and A. M. Stimson). Paper. Pp. 361. Washington: Government Printing Co.

PRACTICE OF OBSTETRICS. By American Authors. Edited by Charles Jewett, M.D., Professor of Obstetrics and Gynecology in the Long Island College Hospital, New York. Third Edition, Revised and Enlarged. Illustrated. Cloth. Pp. 820. Price, $5.00 net. New York and Philadelphia: Lea Bros. & Co., 1907.

MODERN MEDICINE, ITS THEORY AND PRACTICE. Edited by William Osler, M.D., Regius Professor of Medicine in Oxford University. Assisted by Thomas McCrae, M.D. Vol. II. Infectious Diseases. Illustrated. Cloth. Pp. 828. Price, $6.00 net. Philadelphia and New York: Lea Bros. & Co., 1907.

TREATMENT OF DISEASES OF CHILDREN. By Charles Gilmore Kerley, M.D., Professor of Diseases of Children, New York Polyclinic Medical School and Hospital. Fully Illustrated. Cloth. Pp. 507. Price, $5.00 net. Philadelphia and London: W. B. Saunders Co., 1907.

BIENNIAL REPORT OF THE BOARD OF TRUSTEES of the Milwaukee Hospital for the Insane. For the Two Years Ending Sept. 30, 1906. Paper. Pp. 67. Madison: Democrat Ptg. Co., 1907.

THE CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING. First Annual Report of the President and Treasurer. Paper. Pp. 83.

NEW PATENTS.

Recent patents of interest to physicians:

854452. Formaldehyd preparation. Henry S. Blackmore, Mount Vernon, N. Y.
854390. Syringe. Walter G. Bridge, Boston.
854282. Supporter for artificial legs. Erick H. Erickson, Minneapolis.
854093. Neuroptometer. Frank Kennedy, Detroit.
854510. Artificial foot. James W. Mahaffey, Pueblo, Colo.
854593. Pessary. Louise Nelson, Oakland, Cal.
854534. Vaginal syringe. Henry R. Searles and S. S. Jones, Carbondale, Pa.
854544. Eye protector. Emile Verdeau, New York.
854318. Electric sterilizer. Julius Wantz, Chicago.
854548. Pneumatic massage machine. Algot A. Wicklund, Chicago.
855383. Hair tonic and dandruff preventive. Frank W. Brock, Tombstone, Ariz.
854983. Massage machine. Richard V. Clark, St. Louis.
855296. Sanitary cuspidor. Arthur Fishmann, New York.
855342. Movement-cure device. Louis E. Richmond, Cleveland, Ohio.
855262. Combined fan and eye protector. Theodor Ritter, West Hoboken, N. J.
855022. Trial frame for opticians' use. John W. C. Smith, West Lafayette, Ind.
855931. Apparatus for administering anesthetics. Frederick V. Brooking, Macomb, Ill.
855942. Disinfection. Francois Duret, Paris, France.
855573. Medical appliance. Albert C. Heath, St. Paul.
855641. Combined brace and stretcher. Wm. Johnson, Fremont, Ohio.
856093. Syringe nozzle. Harlon F. Ong, Portland, Ore.
855984. Medicine receptacle. Fred J. Russell, Newberry, S. C.
856006. Powder-compacting device for druggists. Ora Ware, Muskogee, Ind. T.
856686. Surgical needle. Thomas C. Edwards, Salinas, Cal.
856778. Optical apparatus. Georgina Heddon, London, Eng.
856367. Medicine cabinet. Otto Jaeger, Ogonts, Pa.
856975. Treating creosote and product thereof. Albert G. Meyer, San Francisco.
856296. Caustic pencil holder. John J. Requa, New York.
856301. Apparatus for atomization. Wilber L. Root, Cincinnati.
856920. Vibrator. Henry M. Scipio, San Francisco.
856927. Tonsillotome. Edwin E. Straw, Marshfield, Ore.
856432. Device for developing the lungs. George M. Thomson, London, Eng.
856378. Mechanical vibrator. Edgar P. Ward and A. H. Herron, St. Louis.
857019. Catamenial appliance. Wm. D. Berry, Louisville, Ky.
857224. Obtaining medicine from carrots. Emilio F. Bolt, Copenhagen, Denmark.
857323. Sanitary head-rest. Nelson Breakenridge, Redlands, Cal.
857043. Screw-press for molding tablets. Hubert Endemann, Vienna, Austria-Hungary.
857566. Atomizing spray nozzle. Alessandro Franchetti, New York.
857127. Testing tube. Constantin Wagner, New York.
857547. Emptying device for collapsible tubes. Alfred H. Weber, Hamburg, Germany.